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Electric Treatment of Airplane Forgings

Details of the Bailey Furnace for Heat Treating Axle Forgings at the Plant of the Ingalls-Shepard Forging Co.

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THE use of the electric furnace as a heating medium, to carry on the various metallurgical processes involved in both melting and refining ferrous and non-ferrous metals, as well as in their heat treatment, is coming more and more into general use by the more progressive companies who strive for quality production as well as for production in quantity.

The reason for this is the superior results now generally recognized, which are obtained from the use of electric heat, in that the three essential and controlling factors necessary for the production of the highest grade material: Atmosphere, time and temperature are more easily controlled through this medium and with a greater accuracy than is possible with any method of combustion heating.

This is at once self-evident when one stops to consider that heat produced from electric energy is produced with 100 per cent efficiency. It is merely a manifestation of electric energy in another form and is accomplished automatically under fixed condition beyond the posssibilities of the errors of the human element, consequent on manual control, to affect, while on the other hand the utilization of the heat of combustion devices involves a large number of variables, all of which either embrace the human element in their control or are beyond its power to correct.

The heat of electric energy is peculiar in that it can be generated in any quantity regardless of temperature. This feature is unique and renders its utilization much more flexible and its control nicer than is the case where the heat of combustion must be utilized.

The Continuous Furnace

As an illustration, take the process of hardening and drawing a high grade alloy steel in an automatic pusher type electric furnace operating continuously, in which the heat is generated by the resistance of the conducting material to the passage of current and radiated mainly to the roof and from there reflected back to the charge being processed.

Such a furnace is further equipped with a special regulating transformer having nine secondary taps in the form of selective, oil break switches manually controlled for regulating the power imput —hence the temperature of the furnace; pyrometric control together with a time element mechanism which, by means of suitable relays, actuate solenoid switches and control the various phases of the process as the work passes through the furnace. Thus it is seen that the operation of the furnace is entirely automatic except for the special regulating transformer, which however is only used during the heating of the furnace, and occasionally to adjust the temperature to meet the requirements of operation.

With a given furnace the electrical conditions, such as the line voltage and resistance of the leads, electrodes and resistor material are definitely fixed, so that upon closing the main line switch the same amount of current will flow automatically, always producing the same temperature to an exact degree since it is governed by the basic formula covering the flow of current through a conducting medium known as Ohm's law. With this fixed law the human element has absolutely nothing to do, because as long as the voltage and resistance of the circuit remain constant the same current must flow *per se*.

It may be argued that the resistance does change, due to the negative temperature coefficient of the resistor material (broken carbon or graphite) and the wastage of this through long and continued use, but, as already pointed out, the fluctuations occur only during the heating up of the furnace before the charge to be treated is inserted and are easily and accurately controlled by means of the special regulating transformer provided for this specific purpose. After the conducting material has attained the desired temperature its resistance remains practically constant. The fluctuations due to wastage are but slight and immediately shown by the instruments on the switchboard. They are easily corrected either by a small addition of more material or by manipulating one or more of the selective oil break switches on the regulating transformer, thus adjusting the impressed voltage and holding the current flow constant.

Again, control of the furnace atmosphere is automatically taken care of by the resistor material in which the heat is generated, which, by its very nature, produces a reducing atmosphere and eliminates one of the main dangers of combustion furnaces—production of scale due to oxidation.

On the other hand it must be remembered that heat obtained from fuel is the result of the chemical processes of combustion with oxygen, and to have oxygen there must be air. Furthermore, that

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solid or liquid fuel must be converted into gas and mixed with a certain minimum quantity of the oxygen of the air before combustion really takes place; that in order to get perfect and complete combustion this air must be mixed in just the right proportion—a condition most difficult to control and seldom if ever met with in ordinary commercial practice, while electric heat is merely another form of electric energy, the conversion taking place by simply throwing a switch.

Electric and Fuel Thermal Efficiency

In fact, it is by no means rare to find coal or even oil-fired furnaces today whose thermal efficiency is no greater than 1.50 per cent, which means that 65 times as much heat, as is utilized in the useful work of heating, is discharged into the atmosphere. This condition is brought about by the many variables incident to heating by combustion as well as lack of proper control due to the human element or to factors beyond its control. The difference in the efficiency of utilization between electric heat and that of combustion becomes greater as the higher temperatures are reached, since electric energy is always transformed into heat at 100 per cent efficiency, regardless of the temperature, so that only the heat losses due to radiation and conduction must be taken care of, while in the case of combustion heating it is the lack of control of the factors producing the heat itself which prevent perfect combustion and, combined with the additional heat loss of connection, renders its utilization much less efficient, and at high temperature extremely low in many cases.

For instance the factors which are controllable in the case of combustion, but which seldom receive the attention which their importance demands, are:

The proper mixing of the fuel gases with the correct proportion of the oxygen of the air, which vitally affects the degree of temperature attained.
The volume and pressure of the gases.
The rate of flow.

All of these factors vitally affect the rate of heating, hence fuel consumption and furnace efficiency. Yet, in the majority of cases in commercial practice, no special precautions are taken to accurately check and record them. In those cases where natural draft is used, the draft is seldom known and changes not only from day to day but often during each day in accordance with the variations in the humidity of the air and velocity of the wind. This factor is beyond the control of the human element.

It is well known that the excess air used is far above that required theoretically, 50 per cent excess being a low average. This practice greatly increases the danger of oxidation and renders the control of the atmosphere in combustion furnaces extremely uncertain and difficult.

Nature of Heat Treatment

The nature of the heat treatment with which this article deals is hardening and drawing, and while stress is laid upon the great importance of accuracy of control, the main object is to emphasize that this accuracy of control is best obtained by the use of the proper type and equipment of an electric furnace in that it allows of absolute uniformity of practice as well, thus placing commercial operation on practically the same basis as that of the laboratory and insuring not only the highest grade product but also duplication and certainty of production.

Hardening of steel or other metal consists of heating it uniformly to a temperature somewhat above the upper critical range and then cooling it suddenly by plunging the piece in water, oil or brine. Its object is to alter the existing structure and substitute permanent changes in its constituents, size of grains and their network. The general effect of the hardening process leaves the steel in its hardest and most brittle state. To just what degree this is attained depends upon the chemical composition of the metal, the temperature used, the rate of both heating and cooling, the nature of the quenching medium used, and the uniformity with which the process is carried out.

The process of drawing involves the uniform reheating of the metal after it has been quenched and then allowing it to cool slowly. Its object is to partially remove or mitigate the strains set up during the hardening process, while its effect is to leave the metal in a state intermediate between that attained by hardening or annealing. Here again the state to which it is finally brought depends upon the treatment given, in which the degree of temperature used when reheating is the controlling factor, since upon this temperature depends mainly the fixed permanent physical characteristics of the piece.

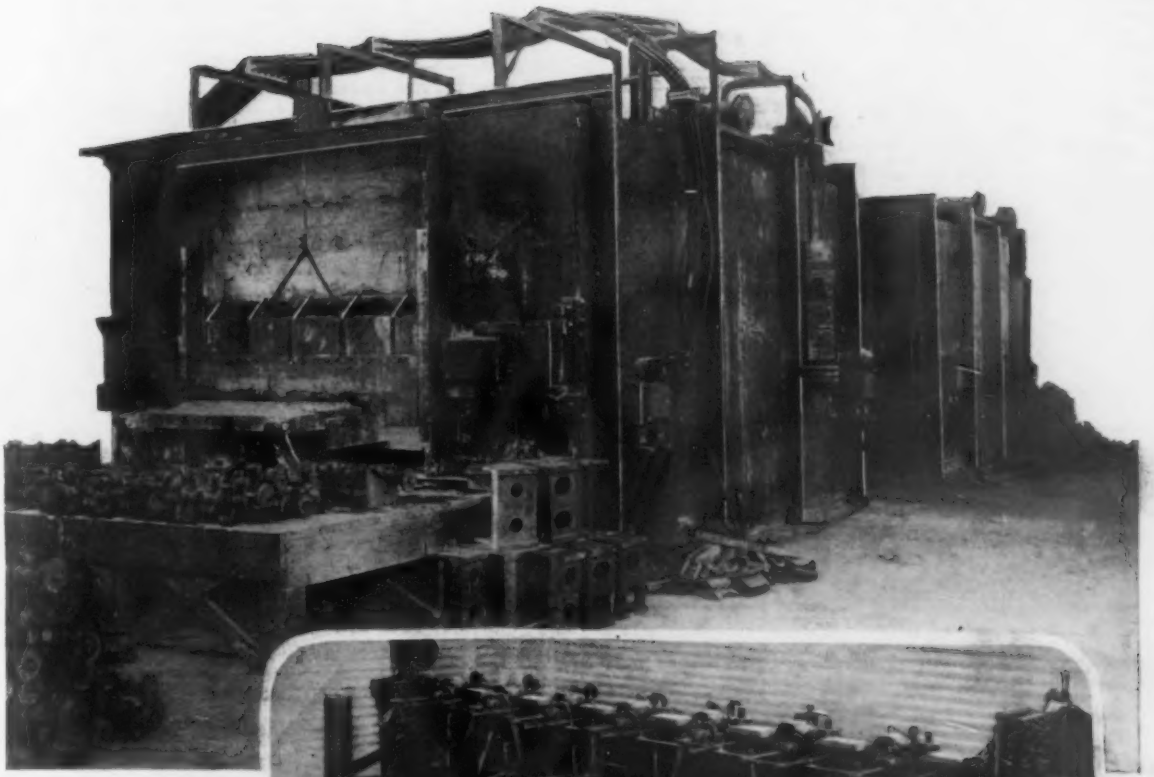
In all heat treatment accuracy of control as regards atmosphere, time and temperature, as well as the uniformity and precision with which the process is carried out are the vital and controlling factors in order to secure quality production and duplication of results. In general it can be stated that the best recognized practice of today, is to use the minimum temperature that will positively give the desired results; to subject each piece to a uniform rate of heating as well as cooling; to so handle the piece that there shall be adequate space surrounding it to allow of an even and uniform penetration of this heating and cooling process, which should only be continued for a sufficient length of time to allow of the piece receiving the full benefit of such treatment.

The Ingalls-Shepard Forging Co., Harvey, Ill., are heating forged axles for airplanes and tractors for the United States Government. This work calls for the very highest grade production since human life is dependent upon the strength and reliability of the material so processed. There are various metals worked. Among them is an alloy steel containing nickel and chromium. To carry out the work this company has installed an electric furnace of the stationary resistance reverberatory type.

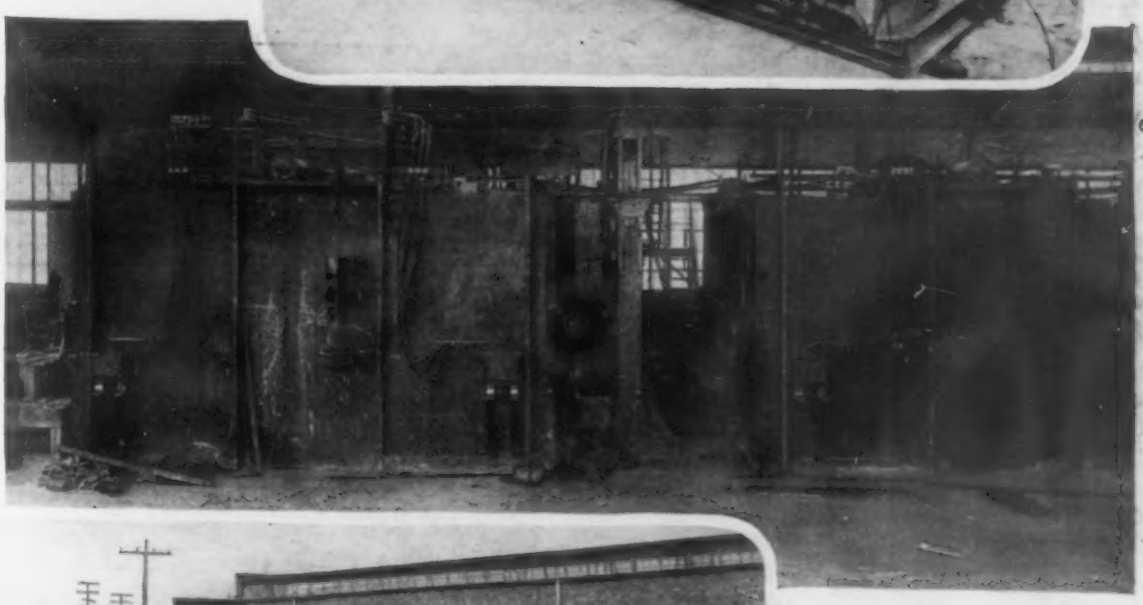
Automatic Pusher-Type Continuous Furnace

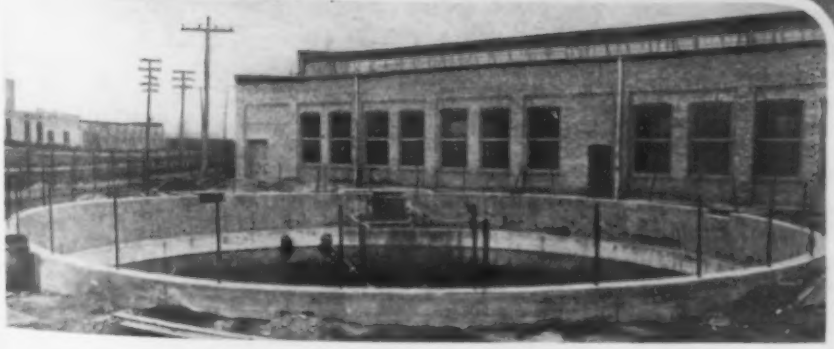
The furnace is further sub-classified as an automatic pusher type continuous operating furnace, not because it must operate continuously 12 to 24 hr. but because, when once charged, the material is automatically carried through the hardening and drawing process without interruption to its completion all in the same furnace which consists of two parts, one for the hardening and quenching operation and the other for the drawing process.

Both parts of the furnace are similar in construction, shape and size, and consist of a stationary rectangular metal enclosure containing a hearth 20 ft. long and 7 ft. wide suitably insulated by means of high grade fire clay bricks which are backed up with heat insulating material packed in between these bricks and the metal. The entire furnace has sufficient capacity to heat 72 tons in 24 hr. to a temperature of approximately 1600 deg. Fahr. The first part or section is rated at 600 kw. and designed for two-phase, 60-cycle opera-



Seven Automatic Motor Operated Valves in a Pulpit Control the Various Operations of the Equipment and the Outfit Includes a Radial Drill Switch and Time Element Device for Controlling the Time in the Quenching Bath.





Automatic Electric Heat Treating in Plant of Ingalls-Shepard Forging Co., Harvey, Ill. The forgings pass through a resistance reverberatory; they are discharged into a quenching tank and are then deposited in the drawing furnace, all in a continuous process. At the left is a view of a spray tank for cooling the quenching water.

tion, while the second is rated at 300 k. w. and operates single phase, the heating troughs being run in parallel.

Running lengthwise along both sides of the furnace are heating troughs made of a highly refractory carbide, mixed with a binder so that it can be readily molded. The troughs are rectangular in shape, but open at the top and filled with finely broken carbon or graphite, known as the resistor material, by means of which the heat is

generated on account of the resistance it offers to the passage of current, which flows into the material through copper electrodes fastened to the ends. Brick piers are used to support these troughs and serve also to dissipate the heat generated. In this manner hot spots in the furnace lining, in the immediate vicinity of the troughs, are avoided and the heat diffused uniformly.

Also running lengthwise in each section of the furnace are guide rails, raised above the furnace floor, along which the shoes or chairs slide. These chairs are mounted in pairs one on each rail and carry the separate pieces, which are placed on them and forced by the pusher mechanism through the furnace. This method of loading or charging the furnace allows of ample space for the circulation of heat around each piece and its uniform penetration, since the heat is radiated from the heating troughs to the roof and from there reflected down to the charge.

At either end of both sections of the furnace are charging and discharging doors which are heat insulated in the same manner as the body of the furnace. These doors are counterweighted and slide up and down in guides vertically, being actuated by separate hydraulically operated cylinders. The entire automatic operation of the furnace is accomplished by hydraulic power, with the exception of the time limit device, used in connection with the quenching operation, which is motor driven.

The Hydraulic Manipulator

A hydraulic manipulator is located between the two sections of the furnace, that is between the discharge end of the heating section and the charging end of the drawing section. This manipulator removes the material from the heating section, quenches it and places it on the operating platform of the drawing section of the furnace from where it is charged into this section by the pusher mechanism with which each section is equipped.

The operating equipment provided with this furnace consists of three special regulating transformers as described in the first part of this article. Two of these are used for regulating the power imput, hence the temperature of the heating section by voltage control, and the other is used for the drawing section.

Three-phase, 60-cycle current at 12,000 volts is supplied by the Public Service Co. of northern Illinois and stepped down to 320 volts at which pressure it enters the furnace through the special regulating oil switches. The actual voltage used in the furnace varies between 320 and 120 volts.

The switchboard, located up in the operating gallery as shown in illustration, consists of a main section and two auxiliary sections located on either side. There are three wattmeters, two pyrometer regulators with clock mechanism and two relays mounted on main section; on the left of the main section are mounted three single phase intergrading wattmeters, while on the other section is mounted one double pole knife switch which controls a motor driven air compressor and one three pole double throw knife switch for starting and operating a motor-generator set which furnishes direct current used in the operation of the pulpit motors. These pulpit motors actuate the hydraulic valves and control the entire operation of the furnace except the time element on the quenching tank, as already pointed out.

The pulpit control consists of a master, multiple-step controller which actuates through a ratchet solenoid switch, seven hydraulic valves by means of small motors which are connected to each of the valves by suitable lever mechanism. Two of the valves are four-way valves and control the entrance and withdrawal of the pushers in and out of the two sections of the furnace. The other five valves are three-way and control respectively the opening and closing of the furnace doors, the vertical raising and lowering of the transfer as well as its right and left swing between the two sections of the furnace, together with its entrance into and withdrawal from the heating section—also its quenching action. The ratchet solenoid control switch of the master controller is actuated by relays which in turn are energized by the pyrometer controlling mechanism. During the quenching period a motor-driven time element is connected by this same master controller and holds the material in the quenching bath for three minutes.

The individual motors which actuate the seven valves are provided with dynamic brakes and limit switches, thus the action of the valves is positively and accurately controlled.

For the purpose of supplying the hydraulic power for operating the various cylinders which control the furnace there is provided a single acting triplex pump, mounted on common bed-plate with and directly geared to a motor; a cylindrical water tank in which the water is maintained constantly at a pressure of approximately 200 lb. per sq. in. by means of a belted, motor-driven air compressor, together with the well known automatic pressure control, furnished with tanks operating on the pneumatic principle. Two centrifugal pumps, mounted on a common bed-plate with and direct coupled to electric motors; a sump pit and a large cooling pond and supply reservoir 65 ft. in diameter and 16 ft. deep, together with the necessary piping and cooling sprays.

The function of the pneumatic water tank is to supplement the water supply, since the amount required to operate the cylinders may exceed the capacity of the triplex pump.

One of the centrifugal pumps is used to circulate the water for the quenching tank, while the other pumps the water, which has been warmed in the quenching tank, from the sump pit into which it flows, to the over flow section of the cooling pond. As the water flows from this section, which is at a higher elevation than the main reservoir, it is partially air cooled. As soon as it enters the pond it is pumped through spray nozzles and completely cooled. In this manner the water is kept at a constant temperature and used over and over again.

Operation of the Furnace

The furnace is connected by the main line switch, which is hand operated, and brought up to the required operating temperature by means of the special regulating transformers. This temperature is determined by setting a contact point on the pyrometer scale at the position corresponding to the degree of temperature at which it is desired to work. From this time on the operation is entirely automatic. As the pyrometer needle swings across the scale, it is depressed every ten seconds by its clock mechanism and in this manner connects with the contact point as soon as that temperature, at which the latter has been set, is reached. This connection energizes one of the relays, which in turn actuates the ratchet solenoid switch of the master controller. As the various steps on this controller are reached, they energize serially the various motors controlling the hydraulic valves and the work is carried through and out of the heating section of the furnace as described.

The second or drawing section of the furnace is controlled in the same manner by a second relay, the work being carried through and ejected automatically, where it is allowed to air cool.

The pyrometric control is governed entirely by the temperature of the material being processed and is actuated by thermocouples located near the discharge end of the two sections of the furnace. The points of these thermocouples are but a slight distance above the material being treated and register their temperature accurately. It takes approximately three hours for the material to pass through both sections of the furnace, including the quenching operation. It is treated at approximately 1560 deg. Fahr. in the heating section and drawn at 1020 deg. Fahr.

The pusher mechanism works at short intervals and pushes the piece to be charged into the furnace which has previously been placed on the chairs on the operating platform, so that after the furnace is entirely filled, the chairs holding the incoming piece, push those at the discharge end onto the transfer platform which has entered the furnace from the other end, from which point the material is conveyed through the quenching bath onto the operating platform of the drawing section by the transfer as already described.

Great care has been taken in developing the automatic features of this furnace. Only the simplest and most substantial actuating devices, well known for their reliability, have been used, thus insuring absolute uniformity of treatment of each piece as it passes through the separate phases of the process—hence certainty of production in that the results obtained must necessarily be duplicated.

While this is but a recent installation, still the results obtained from preliminary tests give great promise that the object for which the furnace was installed—precision and uniformity of treatment—will be completely realized.

TWO SHIPS ANSWER FOR THREE

Record Time on Trips in Manganese Ore, Coal and Other Trades

WASHINGTON, Aug. 13.—By cutting the time spent in port, the Shipping Board is making two ships do the work of three, according to a bulletin issued by the board. This increased service has been obtained by accelerating the "turn-arounds," by hastening the discharge of cargo and the taking on of a new one. Although many fast vessels have been taken out of their old trade routes to be placed in the transatlantic service, yet by the introduction of what may be described as a marine skip-stop system, by direct routing, unification of cargoes, full loading and cutting down of time in port, the slower vessels have made some of the fastest turn-arounds in the history of American shipping.

Despite the submarine menace, vessels in the coastwise trade are working with hitherto unequaled speed. Two round trips a month between Norfolk or Baltimore and Boston were formerly considered good service for a vessel in the New England coal-carrying trade. The pace is now four trips, and one vessel, the Bristol, makes the journey in 5½ days. The famous speed ship Tuckahoe, recently built in the record-breaking time of 37 days, has been making four round trips a month. One day in port—two at the most—is all she has required for loading or unloading.

Fast Trips for Manganese Ore

Because of the restrictions on European and Asiatic importations of manganese, the movement of manganese from Brazil to this country has become one of the most important items of our foreign commerce. In pre-war times the long voyage to Rio de Janeiro and back took from three to four months. But the value of ship tons has so much appreciated that only 85 days are now allowed for the round trip. The Saga, a Swedish vessel under charter to the Shipping Board, lately completed the round trip between New York and Rio de Janeiro in 55 days. Moreover, she was loaded to 90 per cent of her capacity.

Another important item is the nitrate trade with Chile, for the manufacture of explosives as well as for fertilizers. The United States is absorbing practically the entire output of Chilean nitrate, which is the greatest in the world. Formerly a ship making four voyages a year to Antofagasta, Iquique and other Chilean ports, was regarded as rendering good service. The Commodore Rollins recently made the turn-around between New York and Iquique, even though stopping at Norfolk for a cargo of coal for the Canal Zone, in the remarkable time of 44 days. On her maiden voyage last month the newly built Santa Luisa established a record of 18 days from New York to Valparaiso. Her sister ship, the Santa Anna, is doing the round trip between those two ports in 57 days or under.

In the oil trade with Mexico the average turn-around has been reduced to 11 days, while now and then a tanker journeys from Galveston to Tampico and back within a week.

In the Pacific Trade

Over in the Pacific the average turn-arounds are steadily approaching the fastest times of pre-war schedules. The Pacific trades, like the others, have been combed of their swift ships for the line of supplies to Europe, but the vessels allocated to trade with the Orient and with Australia have saved time by stopping at fewer ports and by loading and unloading more quickly than they have done before. The Ventura went from San Francisco to Honolulu, to Sydney, Pago Pago, back to Honolúlu and then to San Francisco in 62 days. The Sonoma, another combination freight and passenger steamer, duplicated this feat.

The average round trip between San Francisco or Seattle and China, including days in port, has been cut to 81 days. These figures cover performances during the past four months. Only 68 days on the average are required for the round trip between the Pacific Coast and Japan. This time will be reduced when some of the newly built ships go into that trade.

The turn-around between San Francisco and the Philippines, including as it does stops at Manila, Cavite, Hong Kong, Shanghai, Kobe, Yokohama and Honolulu—all time-consuming factors in the schedule—ranges from 84 to 130 days. Between New York and Manila the average turn-around is 165 days—a long voyage these days, when only the vital need for certain commodities releases shipping to get them. The turn-around in the British Indian trade, between New York and Calcutta, holds the recent record for elapsed time, an average of 207 days.

The Dearborn Chemical Co., Chicago, has inaugurated a specialties department for the manufacture and marketing of a number of specialties. One is a rust preventative known as No-Ox-Id, to keep metal parts or finely finished surfaces of the completed machines free from corroding. Another specialty is a cutting oil for use in metal cutting, quenching oils for heat treating, drawing oils and Dearboline, a preparation for cleansing machined parts of emery or grease.

The Booth-Hall Co., Chicago, has contracts for building Booth-Hall electric steel furnaces for the following companies: Consumers Steel Co., Chicago, one 3-ton furnace for producing tool steels; Ecorse Foundry & Machine Co., Ecorse, Mich., one 3-ton furnace for producing steel castings. This makes a total of 10 Booth-Hall furnaces installed and building.

Constantly Increasing Demand for Coal

Many Industries Call for Larger Tonnages—Director of Production Makes Appeal to All Operators and Employees to Do Their Utmost

WASHINGTON, Aug. 13—The increasing shortage in coal, particularly in the great industrial districts of the East, is rapidly becoming so acute that it is now the most serious problem which figures in every conference of the War Industries Board.

"What good is it," declared Chairman Baruch impatiently at the end of one of these conferences, "to give industries priority in steel and labor, and to allow them to extend their plants if we cannot supply them with coal enough to run these plants? Something must be done."

What this "something" is to be is still the big problem of the United States Fuel Administration. At the War Industries Board conferences, there have been suggestions that manufacturers of non-war products, particularly in New England, have been permitted to accumulate a full year's supply of coal. With this report comes the suggestion that these favored factories will have to give up a portion of their supply. At the Fuel Administration offices, it is denied that there has been any such favoritism. It is admitted that New England has been allowed to hasten its accumulations of coal, because that is the district in which cold weather shipments will be impossible. The fuel administrators declare that they know where every pound of coal has gone and are ready to direct its re-distribution if it has fallen into the hands of less essential industries, while war factories are threatened with a coal shortage.

Demands Increasing Daily

The greatest trouble, according to the representatives of the Fuel Administration, however, is that the war industries of the country as well as the war-making branches of the Government are daily increasing their demands for coal, far beyond the original budget. Every addition to the Nation's war program is forcing a corresponding increase in the fuel demand. When the Fuel Administration issued its estimates of coal consumption for the year in April, they were looked upon as exaggerated. Now they have proved far too small.

To make matters worse, the Eastern coal fields which must meet the chief demand are already more than 14,000,000 tons behind their original schedule, to say nothing of the daily additions to these demands. Even the present increase in output, declares the Fuel Administration, will not be enough to prevent a serious coal shortage next winter unless the strictest fuel economy is enforced throughout the country. Every means of coal conservation must be observed, and every wasteful and unnecessary use of coal must be eliminated.

Demands of Industries

Almost daily applications are coming to the United States Fuel Administration from war industries for allotments of coal in addition to those made at the beginning of the coal year. Some are from new plants authorized by the War Industries Board, not known to the Fuel Administration at the beginning of the year. The requirements for these plants are in addition to the original allotments. Other demands are from plants already on the preferred list of war industries, for increased allowances because of enlargements and extensions to original plants, made since the Fuel Administration compiled its estimates of consumption.

The increased demand for coal for the Navy reached almost 100 per cent in July. Whereas 3,500,000 was allotted to the Navy in April, the requirements by the middle of July had reached a basis of 6,000,000 tons. By the end of the calendar year 1919, it is estimated that approximately 8,000,000 tons will be required to cover these demands.

With the launching of new ships, the requirements of the Shipping Board have likewise grown beyond all expectation. When the annual allotment was made, at the first of April, 10,000,000 tons was assigned for the purposes of the Shipping Board. The actual requirements as demonstrated by experience, and as a result of the phenomenal results being achieved by the Shipping Board, now place the figure at 13,000,000 tons. So, also, coal for bunkering purposes, at first estimated at 13,500,000, has grown in demand until present calculations call for 21,000,000 tons.

New industries, not in operation at the beginning of the coal year, are now running full tilt or are about to start. From these come demands for coal of large size. Some of these are, per month:

The Youngstown Sheet & Tube Co., additional requirements, 45,000 tons for by-product ovens.

The Cambria Steel Co., 27,000 additional tons for by-product ovens.

The Edgewood Arsenal, 30,000 tons steam coal per month.

The Perryville powder plant, 15,000 tons steam coal per month.

The Worth Steel Co., 6000 tons producer gas and steam coal per month.

These new requirements alone represent an annual consumption of nearly a million and a half tons.

New and Enlarged Plants

But aside from the increased requirements originating from new or enlarged plants, many old plants, rated at the beginning of the coal year for marked increases of allowance over the consumption of 1917, are now demanding still more coal. Practically all the steel plants and furnaces are reported running on full time, 24 hr. per day. There are no suspensions of operations save for repairs and overhauling of plants. In some instances the yearly coal requirements are underestimated. In many others, enlarged production, under increased efficiency, has created a demand for additional coal. Invariably, increased steel production calls for increased coal production, demanding about five tons of coal for each ton of steel produced.

The source of supply for the particular new coal requirements cited, is within a limited coal area. The extra allowances and demands there made, call for coal from New River and Pocohontas low volatile fields of West Virginia; the low volatile fields of Pennsylvania and Maryland; and the high volatile fields of West Virginia, Pennsylvania and Kentucky. These fields produce the grades of coal especially needed for the war work. And it is from these same fields—with the exception of Kentucky—that the calls of New England and the Atlantic States for coal for war use, must be answered.

James B. Neale, director of production of the Fuel Administration, has sent the folowing letter to all the coal operators of the country:

"You must practice the highest degree of efficiency as to mine management and must see to it that your employees are given fair and courteous treatment. As you well know, there are two important factors in the production of coal. One, the operator; the other the mine worker. The latter is helpless to do his part, no matter how willing, if you do not provide him with the means with which to do it. Plenty of mine cars, good air, sufficient timber and other materials are a few of the things you must provide. There are many others, and you must exercise great care to see to it that you do not fail in your duties.

"It is true that each day throughout the country many thousands of tons of coal are not mined, due to absence, inefficiency and short hours worked by the mine employees; but it is equally true that each day many

thousands of tons of coal are not mined due to the fact that the operators have not made it possible for the mine workers to do as much as they are willing to and would do. Both effective factors must be determined to do better than ever before. I hope that a wholesome, friendly spirit of rivalry will quickly develop between the mine management and the mine workers so that each group will try its best to see that it has not prevented a marked increase in tonnage and that, on the other hand, it has contributed the major part of a large increase in tonnage."

Advantages of Powdered Coal as a Fuel

In discussing the problem of efficient combustion of fuel before the western New York section of the American Chemical Society, W. G. Wilcox, advisory engineer Powdered Coal & Engineering Co., Chicago, urged the use of powdered coal to offset fuel shortage and outlined the essentials of good combustion, correct furnace and fuel design assumed, as: (1) Complete oxidation of all combustibles in the coal to avoid loss in the ash and up the stack; (2) control of both combustion and air; (3) control of flame length; (4) a flexibility in the fuel feed which will permit of variation in heat input; (5) control of the nature of the combustion; (6) one-stage combustion.

Referring to oxidation of all combustibles possible in actual practice, he stated that in tests at a plant using 100 carloads of coal per day and employing fuel containing 5½ per cent sulphur, 34 per cent volatile matter, 40 per cent fixed carbon and 18½ per cent ash, the losses with various types of firing showed:

Type of Firing	*Percentage Unburned Carbon in Ash*	*Actual percentage of coal lost*
Over-feed stokers	25	4.6
Chain grate stokers.....	35	6.5
Hand-fired	35 and up	6.5

These losses are not encountered, it is inferred, in powdered coal combustion.

Regarding the combustion of coal as a reaction between solid fuel and oxygen, he asserts that the velocity of the reaction and its completeness depend upon the surface exposed by the solid, the pressure of the reacting gas and the intimacy of the mixture. A 1-in. cube of coal, ground to pass 85 per cent through a 200-mesh screen, he estimates increases the surface of fuel exposed from 6 sq. in. to 1800 sq. in., or 300 fold. Combustion, he states, can be proportionately speeded up and the velocity of combustion doubled with each rise of 10 deg. C., due to greater surface exposure.

A comparison of theoretical flame temperatures which can be obtained from various gases and from properly burned coal, is given by the author in the following table:

Theoretical Maximum Flame Temperature Using Cold Air

Hydrogen	2010 deg. C.
Carbon monoxide	2050 deg. C.
Natural gas	1806 deg. C.
Pure Methane	1958 deg. C.
Pittsburgh coal	3470 deg. C.

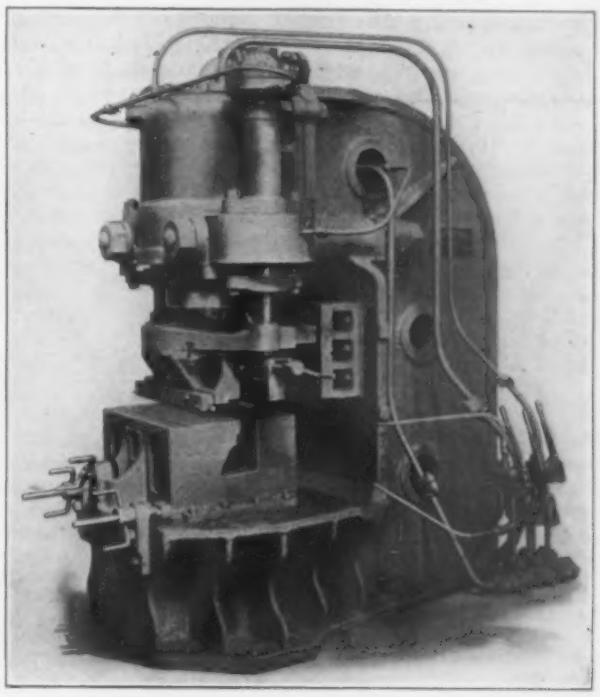
The use of the helical screw feed controller and of variable air pressure for blowing the powdered coal into the combustion chamber, are specified by the author as giving the necessary flexibility of control of combustion, which in his opinion makes powdered fuel an ideal combustible.

The Ford Motor Co., Detroit, Mich., has awarded a contract to the George A. Fuller Co., 175 Fifth Avenue, New York, for the erection of its proposed new plant at Kearny, N. J., to cost about $2,000,000. The initial works will consist of a one-story brick and steel plant, about 400 x 1400 ft., and will be used for the manufacture of patrol boats and submarine chasers for Government service. The plant will be located on the Lincoln Highway near the Passaic River, and it is understood that a large section of the new unit to be erected will be equipped for assembling work.

A 200-Ton Plate Joggling Press

A plate joggling press for use in shipyards has been brought out by the Southwark Foundry & Machine Co., Philadelphia. In addition to being employed as a press, it is also possible to render the machine available for use as a manhole punch by removing a section in the base.

The equipment of the machine includes special dies consisting of a main lower die section and an upper pressure die which is fastened to the ram. The former is cut away to permit channels and bulb angles to be passed through the machine at right angles to the horizontal center line of the machine. The capacity of these dies is 12-in. channels or equivalent sections, and the dies are arranged to joggle both right and left hand, the upper die being equipped with an adjustable slide and a taper wedge for changing the amount of the joggle.



A Removable Section in the Base Enables a New 200-Ton Hydraulic Plate Joggling Press to be Employed as a Manhole Punch Operated directly from a 1500-Lb. Pressure Line or in Connection with a Low Pressure Filling System

The lower dies have three vertical rams and one horizontal one, the last being employed for clamping the work. Two of the vertical rams are operated by hydraulic pressure and are employed to hold the material straight while joggling is being done, as well as acting as stripping dies when the pressure is relieved. The center ram is operated by a wedge and handwheel at the front of the machine and the whole lower die block has a horizontal adjustment through handwheels and screws to center the dies for different classes of work.

The machine has open-hearth steel castings for the main top and bottom portions, and the main ram, which is 20 in. in diameter with a 12-in. stroke, is equipped with hydraulic side pullbacks. The rams operate under a hydraulic pressure of 1500 lb. per sq. in., and the clearance from the face of the ram to the table is 39 in. The throat of the machine from the center line of the ram to the housing measures 30¼ in. and the table is 4 ft. square. The floor space occupied is approximately 8 x 10 ft.

A removable section in the base of the machine enables it to be used as a manhole punch. When handling this class of work it is normally operated direct from a 1500-lb. pressure line but may be operated with a low pressure filling system if desired. The operating valves are placed so as not to interfere with the operator's view of the work.

VALUE OF ELECTRIC FURNACES

Reasons for Encouraging Their Building and Operation Given to the War Industries Board

Supplementing his letter of July 30 published in THE IRON AGE of Aug. 1 in which he protested against the discouraging by Capt. H. C. DuBois, Chemical and Explosives Division, War Industries Board, of the installing of electric furnaces, Carl H. Booth, president Booth-Hall Co., Chicago, under date of Aug. 6, has written a letter to the Steel Division of the War Industries Board in which he contends that the Government should encourage (1) the expansion of the electrode-making industry, using methods similar to those used in increasing the output of other necessary materials; (2) the replacement of converters by electric furnaces for melting cold stock, so as to effect saving of pig iron, coke, manganese and steel; (3) the installation of electric furnaces for the melting of manganese additions to Bessemer and open-hearth metal, and (4) the replacement by electric furnace of small open-hearth furnaces for melting cold stock, and of crucible furnaces for brass and tool steel. In support of these contentions, Mr. Booth says in part:

Conserving Manganese

The atmosphere in an electric furnace is either neutral or reducing. In either case there is no air draft to burn out the manganese contained in the steel or to oxidize the steel. Consequently, less manganese need be added to make up losses and to deoxidize the steel. As contrasted with the electric furnace, the open hearth requires 50 per cent to 100 per cent and the steel converter 100 per cent to 200 per cent more manganese. The electric furnace requires approximately 10 lb. of ferromanganese per ton of mild steel, so that the saving will be from 5 to 10 tons of ferromanganese to each 1000 tons of steel.

It is the usual practice in steel plants to add ferromanganese and spiegeleisen to steel, either in cold or pre-heated form. By melting the manganese in an electric furnace and adding it to the steel in molten form, the quantity of manganese needed to deoxidize the steel is greatly reduced. An article in the Dec. 15, 1917, issue of *Metallurgical and Chemical Engineering*, on pages 702-704, gives figures showing an actual saving of 44.3 per cent by adding molten ferromanganese as against adding pre-heated ferromanganese. The figures in question showed a consumption of 22.5 lb. of pre-heated ferromanganese per gross ton of steel against 9.9 lb. of molten ferromanganese. This represents a saving of more than 560 gross tons of ferromanganese per 100,000 tons of steel. Compared with adding ferromanganese cold, the saving will be even larger.

Conserving Pig Iron

Both the open-hearth and converter processes, when used for melting cold stock, demand the use of pig iron and steel scrap. The proportion of pig iron to steel scrap depends upon the individual plant practice, but it may be said that approximately 40 per cent to 60 per cent pig iron is used in converter practice and 25 per cent to 40 per cent pig iron in open-hearth practice. The electric furnace process alone allows the use of 100 per cent steel scrap without any pig iron being needed.

Conserving Plumbago

Plumbago is used extensively in the manufacture of crucibles. Crucibles are used extensively for the melting of brass and the production of tool steels. The electric furnace is being used widely for the production of tool steels, and there are still many plants using the crucible process which could change over to the electric process with profit. The use of the electric furnace for brass melting is still in its infancy and offers possibilities that may one day rival the use of the electric steel process.

Conserving Coke

The converter process of melting cold stock requires the use of a ton of coke to every 3 or 4 tons of steel. The electric process requires the use of no coke whatever.

Conserving Steel and Iron

In every melting process there are losses of materials. Melting cold stock the loss will be from 7 to 11 per cent in large open hearths, from 10 to as high as 25 per cent in small open hearths and from 18 to 25 per cent in steel converters. In the electric furnace, the melting loss has been demonstrated to be approximately 4 per cent, this low figure being due to the absence of any oxidizing draft in the electric process.

The essentials to the operation of electric furnaces are electric power and electrodes. Of electric power both steam and water generated, there is excess available throughout the country, particularly in the South, Middle West, Northwest and West. Of electrodes there tends to be a shortage due to the expansion of electrode manufacture not keeping step with the rapid expansion of the electric furnace industry. This is the only condition that must be taken care of in order to permit of installing additional electric furnaces and effecting the conservation of necessary materials as listed above. It is a condition easily remedied, as the production of electrodes requires comparatively small investment and is a fairly simple process that has been thoroughly worked out in existing plants.

Great Saving from Electric Furnaces on the Pacific Coast

C. H. Vom Baur, vice-president T. W. Price Engineering Co., Inc., New York, has sent the following letter to Capt. H. C. DuBois, of the Chemical and Explosives Division of the War Industries Board:

Relative to that portion of your letter addressed to the Booth-Hall Co. of Chicago, regarding electric furnaces, page 284 in THE IRON AGE of Aug. 1, we would draw your attention to some other economic factors not dwelt upon by Mr. Booth, with whose letter we are in entire accord.

We have a case in mind where 5300 hp. with hydro-electric power is available on the Pacific coast and where a large forge shop is now purchasing open-hearth ingots from the East. These are usually made from direct pig iron refined in the open hearth. The great saving in freight and possible water haul when making electric steel ingots on the coast, rather than buying them in the East, on a 1000-ton ingot basis, is shown in the table below.

This case is typical of many others, and as the electric furnace for making steel of whatever nature usually uses over 15 per cent scrap and in some cases all scrap, it is evident that the electric furnace to-day is one of the largest economic factors in the iron and steel industry in the United States. Outside of the above, for instance, instead of using from 17 to 19 lb. of either 80 or 70 per cent ferromanganese and an equal amount of ferrosilicon, only half as much is used per ton to make electric steel, compared with the above open-hearth figures. The supplies also to keep electric furnaces in operation are much less than for the open-hearth or even the Bessemer.

Hauling thousands of tons of ingots to Seattle from the East entails a railroad and possibly a water haul on the Great Lakes for ore; this, however, is not figured in the following computation, nor is the higher ignition loss of the open-hearth, as compared with the electric furnace:

Iron ore, 5 per cent Fe.	2,000 tons
20 per cent crop of open-hearth ingots	200 tons
Coke, 114 per cent x 2200 tons (according to Forsythe)	2 508 tons
Coal, at least 133 per cent of coke..	3,344 tons
Limestone, 112 per cent of 2200 tons (Forsythe)	2,240 tons
Total	10,292 tons
Ingots themselves	1,000 tons
	11,292 tons
Less scrap hauled for electric furnace plant to Seattle from Pacific coast parts plus 10 per cent for crop....	1,100 tons
Net saving	10,192 tons
For the railroad haul, average.....	400 miles
	4,076,800 ton miles
At 1c. per ton mile = ...	$40,768

This is practically the cost of hauling the above on our railroads to-day, all of which will be saved, releasing thousands of freight cars and their locomotives for other uses, increasing our steel output tremendously, besides making a better steel which up to 0.40 per cent carbon is 10 per cent stronger than open-hearth, this also not being figured in the above tabulation.

Encouragement of the formation of a new company or new companies to manufacture carbon and graphite electrodes is of the utmost urgency so far as our electric iron and steel industry is concerned. An adequate plant would necessitate 4,300 kw. and cost less than $600,000 for the manufacture of 20 tons of graphite electrodes daily. The raw material for this is on hand in sufficient quantities. The plans for such a plant could be made in a very short time.

With our abundant waterpower and wishing to save coal wherever possible and desiring also to save the railroads all the traffic we can, should not electric furnaces in the iron and steel industry be encouraged rather than discouraged?

Tilting Non-Crucible Melting Furnace

An open-flame, non-crucible, tilting-type furnace for melting brass and other nonferrous metals has been brought out by the Hausfeld Co., Harrison, Ohio. The furnace, which has a capacity of 400 lb., employs either gas or oil fuel, and emphasis is laid upon the fact that the change from one kind of fuel to the other can be made rapidly should the occasion arise. Other features are provision for preheating and finely atomizing the oil before introducing it into the furnace, the placing of the pouring ladle directly over the hole while the metal is being melted, an arrangement which tends to retain the heat within the furnace, and an easy method of tilting the furnace for pouring.

The furnace is equipped with a patented oil burner which provides for preheating the oil before its injection into the furnace. The needle point seat is located at the extreme end of the outlet, which gives a wide range spray. A small division bar is located directly in front of the burner outlet to increase the range of the spray as well as break up the larger oil particles. This arrangement, it is pointed out, preheats the oil thoroughly and finely atomizes it so that every drop is used and quick ignition results. The oil feeder employed develops a lift of over 18 ft. and has a delivery pressure of 60 lb. A relief valve which is capable of regulation is provided, and the outlet is piped to the oil reservoir, thus permitting the return of any excess quantity of oil through the pipe at the right. The furnace is ordinarily operated on gas fuel, but should a change to oil become necessary in an emergency this is easily accomplished by loosening two bolts and sliding the oil feeder housing forward. This causes the gears on the feeding device to mesh with those on the ½-hp. motor used. The two bolts are then tightened and the plug in the top of the elbow attached to the drum removed, after which the oil burner is inserted. The flame, whether from oil or gas, covers the entire inner surface of the furnace and gives a uniformly distributed heat. In this way it is claimed the metal is melted largely by the heat reflected from the walls, in much the same way that metal is melted in crucibles. From 9 to 12 heats, it is stated, can be obtained every 9 hr., depending upon the character of the metal being melted.

When the furnace drum is in a vertical position the furnace can be charged with gates and other scrap, while the blast is on. The metal is thrown on top of the drum, where it is preheated, and is then pushed through the charging hole with a bar as fast as may be desired. The pouring ladle is located directly over the pouring hole, and remains there while the entire heat is being melted. In this way, it is pointed out, the ladle is heated to practically the same temperature as the interior of the furnace, thus eliminating a separate preheating furnace, as well as aiding in retaining the heat within the furnace.

A handle providing the necessary leverage for easy manipulation tilts the furnace, and a spring-actuated locking arrangement which tends to keep a bar on the frame in constant engagement with the teeth of a sector attached to the drum is provided to hold the drum in any desired position. This lock is released by pressure applied to a treadle at the base, thus leaving both hands free for tilting or rocking the drum. A double treadle is provided, thus enabling the one which is the most convenient to be used when tilting. When the pressure is removed from the treadle the spring in the locking arrangement operates to hold the drum in the desired position.

This Tilting Type of Non-Crucible Melting Furnace Is Characterized by the Speed with Which the Change from Oil to Gas Fuel Can Be Made as Well as Arrangements for Preheating and Finely Atomizing the Oil Used.

Hydraulic Accumulator Protective Valve

A new type of valve which is designed to protect large accumulator systems has been developed by the Hydraulic Press Mfg. Co., Mount Gilead, Ohio. As long as pressure is maintained in the system, it is explained, the liquid is permitted to flow, while if the pressure should be lowered due to a break in the piping system, for example, the main check valve is seated, this being relied upon to prevent falling of the accumulator.

The valve is installed directly at the pipe outlet of the accumulator with a pilot line connection to some distant point of the piping system. The pressure of the liquid from the pump lifts the main check and charges the accumulator. At the same time, the plunger in the cylinder is raised, thus holding the main check off its seat irrespective of whether the accumulator is being charged or discharged as long as the pressure on the pilot line is maintained. If a break should occur in the piping system the pressure, of course, is immediately lowered, and this loss of pressure in the pilot line and small cylinder is overcome by a spring, thus permitting the plunger to drop. The spring above the main check, together with the flow of the liquid from the pump, causes the check to seat, thus it is pointed out preventing falling of the accumulator. A small tee valve can be installed in the pilot line and by opening it and relieving the pressure on the pilot line, it is possible to test the protective valve to see whether or not it is working properly.

A Valve Installed at the Pipe Outlet of a Hydraulic Accumulator Is Relied Upon to Prevent Falling of the Accumulator Due to Failure of Line Pressure

Salvaging Screened Coke

UNIONTOWN, PA., Aug. 12—Recognition is given the "cokebreeze" industry as a legitimate by-product of the coke region in the maximum price for screened coke issued recently at Washington by the United States Fuel Administration. The ruling is of much importance in the Connellsville regions where many operators are now engaged in salvaging screened coke from the once abandoned ash dumps scattered about every operation.

The interpretation placed upon the order by the Connellsville regional administration means that cleanly screened coke from ash dumps which can be used as domestic fuel can be sold at a maximum price of $6 whether it is shipped for domestic fuel or not. If it is sized coke over ¾ in., it will bring a maximum of $7.30 and under ¾ in. a maximum of $5 and the $6 price applies to all sizes mixed together if the coke is large enough for domestic use.

X-RAYS AND METAL STRUCTURE

Important French Results from Increasing the Intensity of the Light

A considerable amount of attention is being paid just now to methods of examining the structure of metals and alloys with the X-rays, and installations for this work have been already established in some of the biggest engineering works in France, says a writer in the Engineering Supplement of the London *Times*.

It is a generally accepted maxim that metals are opaque to the X-rays, but since the introduction of the new tube of Dr. Coolidge, which is similar in principle to the wireless thermo-valve, an entirely new order of things has arisen. The discharge from an X-ray tube can be enormously increased by making the cathode of a spiral of tungsten, surrounded by a sleeve of molybdenum to focus the cathode stream. The tungsten spiral is heated by means of a local battery, causing it to give off a stream of negatively charged electrons; this enables an intensely powerful beam of X-rays to be generated, with the further very great advantage that the intensity can be controlled or regulated by the degree of heating of the tungsten spiral. The vacuum of the Coolidge tube is 1000 times greater than that of the ordinary X-ray tube.

Intensity of the Rays

Rays can be generated with this tube which are capable of penetrating four inches of hard steel, and a flaw in the steel of as small diameter as one sixty-fourth of an inch can be photographed. It will thus be seen that an important new means of examining alloys and castings has been found, and a considerable amount of research is now being conducted with the object of developing it on commercially useful lines. The method has been found very useful in examining aluminum weldings, and also in testing the efficacy of chemicals added to avoid small air holes in the castings of new alloys. Many similar applications, which will at once suggest themselves to the engineer, are already in use, or are being investigated.

The installation consists of a powerful induction coil, or a high-tension transformer, capable of applying to the terminals of the tube a pressure up to about 250,000 volts. At this high pressure the current passing through the tube is between one and three milliamperes. One result of the work has been to establish the fact that the penetrating power of the X-rays depends solely upon the potential applied to the tube.

Protection Against Burns

The most stringent precautions have to be observed to protect the operator from injuries due to the rays or X-ray burns. All ordinary protective media are perfectly useless. The tube is enclosed, except for the aperture through which the X-ray beam passes, in a box heavily lined with lead, and the operator usually manipulates the apparatus from a cabinet, also heavily lead coated, placed in another room. The exposure may be from one to four, or even five, minutes; as the anode of the tube quickly gets red-hot, it may be necessary to give a part of the exposure, allow the tube to rest, and then continue the exposure. Water-cooling devices are in use for cooling the anode. The discharges are many hundreds of times greater than those usually employed in medical work.

Method of Working

The method of examination is purely photographic. In medical work, a great deal is done by visual examination with a fluorescent screen; but in dealing with castings two or three inches in thickness the degree of visibility of a flaw is too small to make visual examination possible. A photographic plate is therefore exposed underneath the metal, but the exposure ordinarily necessary can be reduced by 95 or 96 per cent by means of a new "intensifier screen" made specially for radio-metallographic work and placed in contact with the plate.

Such is the discriminating power of X-rays of even this enormous degree of penetration that while a hole 1-50th of an inch in depth can be clearly detected in a 2-in. hard steel casting, the delicate structure of a scarab can be discerned with completeness; the entire structure of a fuse in a shell, the internal parts of a sparking plug, and so on, can be photographed with the precision of a draughtsman's drawing; and differences in thickness of 1000th of an inch in mica insulators can be detected.

Rapidity of Working

As regards rapidity of working, which is important from a commercial standpoint, 60 radiographs have been made in ten minutes in a test carried out for routine testing. The great advantage presented by the Coolidge tube is that the working conditions can always be kept constant, and any given conditions can be exactly repeated on a future occasion. Industrial research and routine testing are likely to benefit considerably from this new type of technique, which is being investigated by many of the leading continental and American engineering firms, and—somewhat late in the day—is receiving attention in this country.

Call for Skilled Leader Type Mechanics to Become Officers

The call for national service has been sounded for mechanics, superintendents and foremen in the mechanical trades to qualify as officers in the Ordnance Department of the United States Army. The commissions of captain, first lieutenant and second lieutenant will be granted. The Ordnance Officers Examining Board will hold examinations in the following cities: Cleveland, Aug. 19 and 20; Detroit, Aug. 21 and 22; Chicago, Aug. 23 and 24; St. Paul, Aug. 26; Minneapolis, Aug. 27; Des Moines, Aug. 28; St. Louis, Aug. 29 and 30 and Indianapolis, Aug. 31. These officers are to be placed in command of the mechanical crews stationed behind the lines for quick repair of tractors, motors, guns and other fighting ordnance equipment, so that the advance of the Army will not be held up.

All applicants must be over draft age and under 40 years. They must be highly skilled mechanics of shop foremen or manager type and experience, men who have had considerable practical automobile repair experience and who can efficiently handle men in the shop. It is necessary that they should have had actual machine shop experience.

All men desiring to apply and living in or near one of these cities should ask the Military Training Camps Association, stationed in each of the cities noted, for the preliminary application blank and instructions. Applicants living in other districts should write to C. W. Jones, War Service Exchange, 596 State, War and Navy Building, Washington, stating training and experience in mechanical lines.

Booze and Piety in Coke Regions

UNIONTOWN, PA., Aug. 11—The suggestion made by the Connellsville regional fuel administration to Catholic priests that weekday church services should be eliminated to stimulate the production of coal and coke has been turned into another argument for wartime prohibition by the spokesman for the priests of the region. In a statement made public after the request had been issued Rev. M. A. Lambing, pastor of the St. John's Roman Catholic Church of Scottsdale, charges that for every bushel of coal lost through attendance at church services, many tons are lost through the inobriety of miners in the coke region. He adds:

"There is too little piety and entirely too much booze in the coke region to get out the maximum of coal. If piety were encouraged, people might come to understand that to do their very best for the country is a duty they owe to God as well as to their country, and would be led to fulfill it. Leave the people all the piety they have and increase it; cut out the booze."

NEW ELASTIC LIMIT RECORDER

The Sumner Instrument Enables Tests to Be Made Accurately and Rapidly

BY J. L. JONES AND C. H. MARSHALL*

There has been in use in the physical testing laboratory of the Westinghouse Electric & Mfg. Co. at East Pittsburgh, Pa., since 1909, an instrument that very much facilitates the taking of accurate elastic limits. The original design was made by J. N. Sumner, an engineering apprentice, since deceased. It has been modified at various times and its present form is shown by Fig. 1. The method of attachment to the testing machine is shown by Fig. 2, which represents the instrument in actual use.

This recorder may easily be applied to the standard testing machine and by its use a single person can accurately determine the elastic limit of any sample that is being tested in tension or compression.

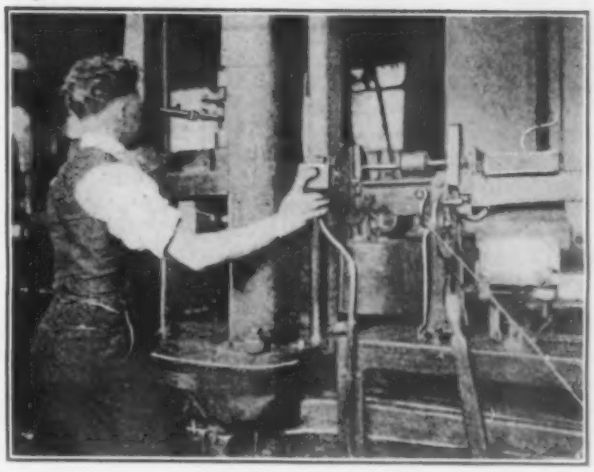
The method that is usually followed is to have one person read the elongation with an extensometer, another operate the testing machine and read the load applied, while a third person acts as a clerk and records the readings. This method is too slow for commercial work and it multiplies the liability of error due to personal equation.

The apparatus consists of a semi-automatic load-indicating mechanism which is attached to the testing machine by means of a frame, as shown by Fig. 2. The recorder can be moved to the right or left and fastened securely in any desired position by means of a set screw. The vertical rows of holes in the standards at each end (only the standard at the left end of the frame appears in the illustration) allow the recorder to be raised or lowered at will.

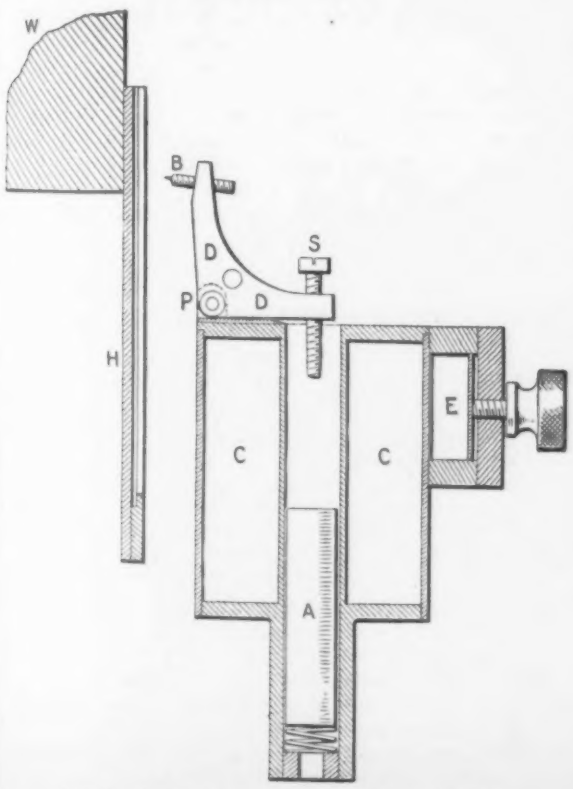
Attached to the weighing poise is a card graduated to conform to the graduations of the beam, the range being from zero to 12,000 lb., with a minimum reading of 100 lb. This allows a standard 4 by 6-in. filing card to be used and the results are sufficiently accurate for commercial work. As the limit of accuracy of weighing on a testing machine of 100,000-lb. capacity is about 50 lb., it might be desirable to have the minimum reading of the card 50 instead of 100 lb. This can be easily accomplished by increasing the length of the card to 12 in. and reducing the weight of the poise one-half, thus doubling its rate of travel.

On the back of the card spaces are ruled in which may be recorded the serial number of the sample tested, ultimate (beam) load, elongation in 2 in., and the reduced diameter. After the elastic limit is determined the card is filed so as to be available in case a complete curve is subsequently desired.

*From a paper presented at the twenty-first annual meeting of the American Society for Testing Materials at Atlantic City, N. J., June 24 to 29, 1918.



The Recorder as Operated by One Man.



Details of the Sumner Elastic Limit Recorder.

Description of the Recorder

The recorder is essentially a solenoid with a loosely fitting armature, A, Fig. 1. When at rest the armature is at the bottom of the tube as shown, but when current is flowing through the coil, the center of the armature will be at the center of the coil. The adjustable screw, S, is set so that it will just touch the armature when it is in this position.

If the armature is at rest at the bottom of the tube and the circuit is closed it will be pulled up and its inertia will carry it past the center of the coil so that it will hit the screw S a hammer blow. It will then drop to the center of the coil where it will be held until the circuit is broken, when it will drop to the bottom of the tube. The bell crank, D, is pivoted at P so that when the armature hits S, the motion is transmitted to the prick punch B, which is driven sharply against the card in the holder H, making a small pin hole in the card and immediately returning to its normal position, allowing the card to continue its movement. A light spring (not shown) on the crank assists it in returning to its normal position. In the bottom of the tube is a short spring which acts as a shock absorber for the armature. A clamp, E, on the side of the recorder serves for mounting it on the frame.

The frame consists of two upright pieces fastened to the machine, with a cross-piece on which the recorder is mounted by means of the clamp E. The recorder can be slid along this cross-piece in order to set it so that it starts at the zero point; and also in order to reset it, which is necessary when the load at the elastic-limit exceeds 12,000 lb., as the record must then be run across the card a second time. The uprights have holes drilled about ½ in. apart so that the height can be adjusted and the position of the recorder changed. In this way several tests can be put on one card. A push button for operating the recorder is located where the operator can conveniently reach it while he is watching the extensometer. The card holder is made of aluminum and is fastened securely to the poise. A hole is drilled in the poise to remove a weight equal to that of the holder.

Method of Operation

When using the recorder, the test specimen is placed in the machine in the usual way, with the extensometer in position. The card is then placed in the holder and

fastened so that it cannot shift. The poise is then set so that the beam reads zero load and the recorder is slid along the cross bar until when the button is pressed the punch mark is on the zero line on the card. The recorder is clamped in this position, the machine started, and the operator stations himself at the extensometer. When the extensometer shows predetermined elongations, such as 0.0002, 0.0006 in., etc., he presses the button. As the card attached to the poise is moving in front of the recorder, which is stationary, and as the card is graduated to correspond to the beam, the punch marks will indicate the load at which the elongation is measured.

The operation is continued until the elastic limit is reached, after which the extensometer is removed and the yield point determined. The test is completed in the usual manner, the record being made on the back of the card.

For the next test, the recorder can be moved down to the next position and in this way five or six tests may be grouped on the same card. After the tests are completed the card is removed and curves plotted. The elastic limit or proportional limit is determined from the curves, the points of which will be found to be very regular. With this apparatus, elastic-limit determinations can be accurately and rapidly made, and if the card is filed a complete record of the test is available at any time.

Reduction in Steel Corporation Orders

The unfilled tonnage statement of the United States Steel Corporation published on Aug. 10, showed a falling off of 35,065 tons, whereas that of one month previous showed an increase of 581,243 tons. The total of orders on the books July 31 was 8,883,801 tons, or about the equivalent of a six months' output. Much more slowly than the independent companies, whose statements have been published, is the Steel Corporation coming to a three months' supply of orders ahead. The Government's intention apparently is to have about three months' orders on the books of the various producers. The table below gives the unfilled tonnage for the Steel Corporation at the close of each month beginning with January, 1915.

	1918	1917	1916	1915
January	9,477,853	11,474,054	7,922,767	4,248,571
February	9,288,453	11,576,697	8,568,966	4,345,371
March	9,056,404	11,711,644	9,331,001	4,255,749
April	8,741,882	12,183,083	9,829,551	4,162,244
May	8,337,623	11,886,591	9,937,798	4,264,598
June	8,918,866	11,383,287	9,640,458	4,678,196
July	8,883,801	10,844,164	9,593,592	4,928,540
August	.....	10,407,049	9,660,357	4,908,445
September	.....	9,833,477	9,522,584	5,317,618
October	.....	9,009,675	10,015,260	6,165,452
November	.....	8,897,106	11,058,542	7,189,489
December	.....	9,381,718	11,547,286	7,806,220

The Conneaut Shovel Co., Conneaut, Ohio, has reelected the old board of directors and the following officers: President, G. M. Brown; vice-president, M. G. Spaulding; treasurer and general manager, G. W. Benton, and secretary, Chester J. Welch. During the past fiscal year, the company manufactured 756,000 shovels, equal to the plant's output in the three previous years. Extensive additions are under way and new machinery is being installed. The company employs 250 men.

The Imperial Brass Mfg. Co., 1200 West Harrison Street, Chicago, has recently opened what is said to be the largest welding shop in the Middle West. This department occupies a new building, 50 x 150 ft., which was erected especially with a view to speeding up Government contract work, in which the use of the oxy-acetylene welding process was required.

The Interstate Iron & Steel Co., 104 South Michigan Avenue, Chicago, has obtained a permit for the construction of two one-story mills, 72 x 72 ft. and 85 x 300 ft., at 118th Street and the Calumet River, Chicago, to cost $39,000 and $48,000 respectively. The mills will be used for manufacturing steel.

STEEL SHIPS FAVORED

Messrs. Schwab and Piez Explain the Policy of the Emergency Fleet Corporation

Charles M. Schwab, Director General, Emergency Fleet Corporation, in a statement given out at Philadelphia Aug. 10 states that this is not the time to engage extensively in the building of concrete ships. He says that he is not essentially opposed to the concrete ship as such, but believes in developing all of its possibilities, as the Emergency Fleet Corporation is now doing in a broad way. He is, however, opposed to the inauguration of a large concrete program, because the controlling factors of the whole shipbuilding enterprise are such that to plunge at this time in concrete ships, even if they were as established as steel ships, would interfere with the wood and steel program to which we are committed on a large scale, and there would be no net gain in general progress, but rather a setback.

Mr. Schwab says that the small ships are not economical for trans-oceanic purposes, as it has been found that, for example, 3500-ton vessels have only about 50 per cent efficiency, that is, in actual service they carry only half or less of the indicated dead weight tonnage, but a 7500-ton steel boat is more than 70 per cent efficient. "We can," said Mr. Schwab, "in the present state of our knowledge, rely only upon steel for large vessels. The 5000-ton wooden ship is doubtful, and until we have actually built some 7500-ton concrete ships, which we are now doing, we would not be justified in largely diverting energy, material and labor from what we are sure of." Mr. Schwab, continuing, said that the principal trouble at the present time is in regard to fittings. "We have," he said, "many hulls lying at docks or moorings waiting for a thousand and one accessories which we are unable to get."

Mr. Piez's Views

Charles Piez, vice-president United States Shipping Board, has also issued a spirited defense of giving steel shipping the preference over concrete. The answer was called forth by recent criticism of the corporation's policy.

Mr. Piez points out that the building of the hull is only a part of the work of shipbuilding, and that the work of fitting it out with machinery and equipment is the same for a concrete ship as for one of wood or of steel. He says the output of vessels is now limited not by the number of hulls that can be built but by the number that we can equip. Because of the advantage in the effective value of steel ships as compared with wooden and concrete bottoms, Mr. Piez insists that the Emergency Fleet Corporation has been wise in concentrating its efforts on the construction of steel tonnage and treating the wood and concrete ships as purely emergency agencies. In his statement Mr. Piez continues:

> The Fleet Corporation is at present building all the wooden ships that the resources of raw and finished material necessary will permit. Its program of steel construction is likewise planned up to the limit of the steel, machinery and equipment possibilities. The output of steel ships and of wooden ships is constantly increasing, but we have not yet reached anything like the possibilities of output in steel construction. The output of steel plates and shapes in our rolling mills is still considerably greater than the needs of steel shipbuilding at its present rate of production, and Mr. Schwab's concern, in securing a proper distribution of the available steel supply, is not that the steel output may not meet our present needs, but that it may not meet the greatly expanded needs of our future plans. He is bringing the subject up in time so that steps may be taken to increase the steel producing capacity in conformity with the plans of steel ship construction.

Electric arc welding is being substituted for riveting in the manufacture of oil tanks 35 ft. long and 6 to 8 ft. in diameter made of ½ in. plate by the Kansas City Structural Iron Co., Kansas City, Mo. This company recently installed a 150-amp. Lincoln arc welder for this purpose.

New Hoop Mill in the Chicago District

The new plant under construction for the Acme Steel Goods Co., manufacturer of steel and wire products, 2834-2840 Archer Avenue, Chicago, is to be located on a 130-acre site just adjoining the corporate limits of Chicago at the village of Riverdale on the Calumet River. This land has access to the Pennsylvania, Baltimore & Ohio, Illinois Central, Indiana Harbor Belt and Western Indiana railroads and has more than half a mile frontage on the river, which at this point is about 100 ft. wide and has a depth of 12 ft.

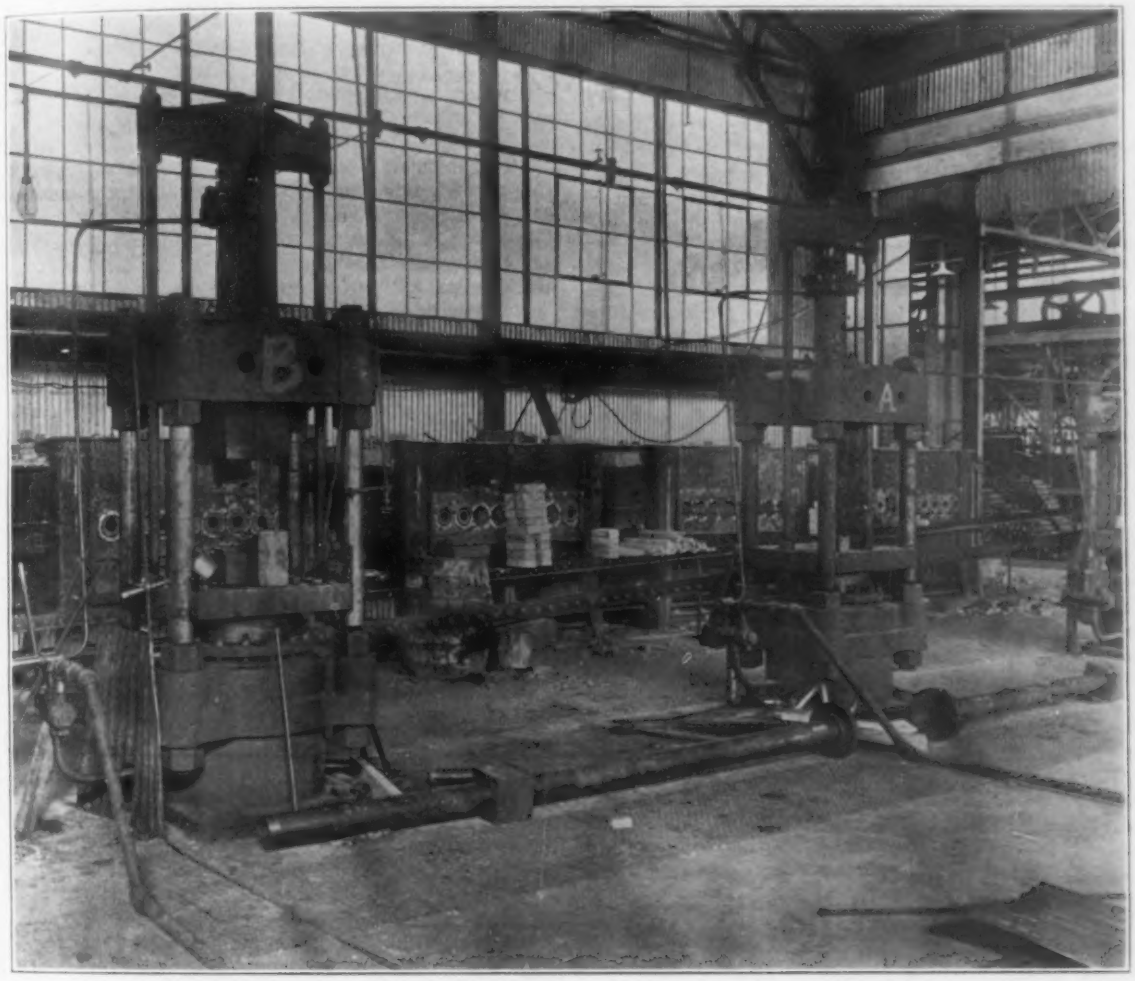
The first building will be a Morgan continuous hoop mill, rolling long length steel hoops. The main building is 85 x 720 ft. and carries a 15-ton crane the entire length. It will be entirely of concrete, including the roof. The side walls will be largely windows with metal frames and glass. Outside of this building will be the boiler houses, gas producers and machine shop. R. F. Wilson & Co. are now erecting the buildings. The Morgan Construction Co., Worcester, Mass., is building the mills and furnaces. The General Electric Co. has the contract for the electric machinery, which consists of one 2000-hp. motor; one 1000-hp. motor and 500 hp. of miscellaneous motors. This mill will use billets from 1¾ in. square to 2½ in. square and will produce hoops from 1 in. to 2½ in. wide and from 23 gage to 16 gage in thickness. Hoops will be run in continuous lengths, each length weighing about 220 lb. The main part of the output of the mill will be used in the company's present business, where this hoop is pickled and rolled down to ribbon steel as thin as 0.010 in. The additional buildings and equipment will mean an investment of over $1,000,000, and it is planned to have them in operation shortly after Jan. 1, 1919.

The Acme Steel Goods Co. was founded in 1880 to manufacture patented metal specialties going to the wooden box manufacturers and to the shipping room.

Nosing Presses for 75-MM. Shells

The Southwark Foundry & Machine Co., Philadelphia, has recently supplied three hydraulic nosing presses to a large manufacturer of munitions. The presses operate under a line pressure of 1200 lb. and each has a capacity for nosing 75-mm. shells at the rate of 3 per min.

The press is equipped with a bronze body balanced three-way valve, which, it is pointed out, enables the press to be operated easily. The main cylinder is of open-hearth steel and is designed for continuous operation for 23 hr. daily. The pull-back capacity is sufficient to give quick operation and provide the necessary power for stripping. The press ram, which is 19 in. in diameter, has a stroke of 12 in. and the clear distance between the columns is 27 in. in one direction. An opening of 4 ft. is provided between the platens.



Hydraulic Presses Operating Under a Line Pressure of 1200 Lb. Will Nose 75 Mm. High Explosive Shells at the Rate of 3 Per Min.

Slatington Plant Purchased

Robert Grant, dealer in iron and steel, Woolworth Building, New York, has purchased the majority stock of the Slatington Iron & Steel Co., Slatington, Pa. A new board of directors has been elected and the following officers appointed: President, Robert Grant, New York; vice-president, Louis Simon, Washington; treasurer and general manager, B. Frank Conner, Slatington, Pa.; secretary, R. G. Treudley, New York. It is the intention of the new owner to install an 8-in. mill and have it in operation within the next 60 days. The mill was built in 1890 with six single puddling furnaces, one busheling furnace, two heating furnaces and three trains of rolls; annual capacity, 1500 tons of bar iron. It was placed in the hands of Oscar A. Neff, trustee for the bondholders, in 1915 and sold Dec. 24, 1915, to Edwin German, Slatington, Pa.

TO BETTER AIRPLANES

Popular Suggestions on Improvements Asked by Naval Consulting Board

WASHINGTON, Aug. 13—In an endeavor to enlist popular suggestions the Naval Consulting Board of the United States and the War Committee of Technical Societies has issued an important pamphlet on the problem of airplane improvement. The appeal makes no effort to confine its object to experts in aviation. The introduction is a general call for help, in part as follows:

"A billion dollars has been set aside for production. The finest shops and the best trained men in the country are working upon design and manufacture and we will soon have machines. But we want the best in the world. The men engaged in the details of the work are just now under a pressure which is not favorable for the exercise of creative powers. Technical men who are far enough from the work to see it in a different perspective, therefore, have a special opportunity for useful service. In order to save you labor, specialists have summarized in the inclosed bulletin the most pressing problems of aircraft improvement and have indicated probable lines of progress. Any help you can give will be welcomed."

For manufacturing reasons it is necessary to standardize design and just now the Government is not in a position to consider improved motors and systems of power. Pressing needs of the moment must be met. At all times, however, advances which are great enough and which have been sufficiently proved, necessarily command a right of way. Power development is moving so swiftly and there is so much room for its advance that nothing is really fixed, and no nation is taking a chance of overlooking anything which is really worth while. Minor improvements, applicable with the present motor, can be considered at any time if they are of sufficient value.

For war uses the cost of power is immaterial, the important object being to secure steady, reliable operation; to obtain lighter weights than the 2 to 2.5 lb. per hp. now attained (1.75 lb. without radiator, water, piping, propeller, etc.), and to obtain more work per pound of fuel carried.

How great is the room for improvement is best shown by the following table of approximate figures showing the operating conditions of the average airplane motor:

Energy of fuel delivered by engine shaft to propeller (thermal efficiency) for the indicated hp. 30 per cent. For the brake hp.	25 per cent
Energy consumed by engine friction	5 per cent
Energy lost by cooling	30 per cent
Energy escaping in exhaust (including that of unburned fuel)	40 per cent
Total fuel contents	100 per cent
Mechanical efficiency of propeller	75 per cent
Net energy of fuel delivered by propeller and available for flight (0.75 x 0.25)	19 per cent

An article by Dr. W. F. Durand, scientific attache of the American embassy to France and former chairman of the national advisory committee for aeronautics, points out the possibility of a greater use of sheet metals in airplane construction. The chief advantage of sheet metal or metal fabric for wing surface or covering, he points out, would be non-inflammability and perhaps greater durability, but no wing covering can be considered which is markedly heavier than present forms for the same strength. Present coverings weigh from 4 to 4.5 oz. per square yard and have a tensile strength per inch of width of 70 to 80 lb. Any proposed substitute form must also give a smooth and continuous surface comparable with present forms. For the wing skeleton or frame, steel or aluminum alloys are attracting attention and seem to offer possibilities.

For fusilage construction steel or metal construction seems here also to offer hopeful possibilities, but under general limitations of equivalence regarding weight and strength compared with wood. For ties the use of steel wire cable is standard and practically universal. It seems hard to imagine material superior to the best modern alloy steel wire, but there seems no reason for assuming that such material represents the last word in the wire maker's art and there is, therefore, room for improvement even here, both in the material employed, in the mode of laying up wires to form a complex tie member and in the form of section of such member. Joint fastenings are commonly made of sheet steel or sheet bronze. There is room for improvement expressed in terms of ease of manufacture, economical distribution of material, facility for attachment of wire or cable ties, and general adaptation to purpose.

Inventions and ideas are to be submitted to Thomas Robins, secretary Naval Consulting Board, 15 Park Row, New York.

Industrial Conference Plan of the Colorado Fuel & Iron Co.

The monthly *Bulletin* of the Colorado Fuel & Iron Co. reports features of a visit of John D. Rockefeller, Jr., in June to the Pueblo, Col., plant of the company, one being a joint conference of officers and representative workers at the steel works. In an address Mr. Rockefeller claimed success for the industrial conference plan adopted by the company three months ago. The workmen's representatives in the conference consist of not less than one for every 150 men in the mining camps and in the steel plant. Speaking of the results, Mr. Rockefeller said that "grievances have been eliminated as a disturbing factor; continuous operation of plant, with increased output, has resulted; also improved working and living conditions and frequent and close contact between employees and the officers of the company. Good-will has been developed to a high degree, and a community spirit is increasing observably." In the third Liberty loan practically every man in the camps and in the steel works subscribed, the total being over $1,000,000 in addition to $700,000 subscribed to the two earlier loans. In the Red Cross campaign practically every worker subscribed at least a day's pay.

Mr. Rockefeller said that the workmen's representatives in the conference expressed approval and appreciation of the plan and added that this view is held by a very large majority of their fellow workers. He considered the conference between representatives of the company and of the men to be no longer an experiment and expected continued success for it so long as it is carried out in the future as in the past in a spirit of sincerity and fair play. He considered it "a vital factor in re-establishing personal relations between the parties in industry and developing a genuine spirit of brotherhood among them."

Shell Plant Burned

The entire trench mortar shell department of the Western Cartridge Co.'s plant, at East Alton, Ill., near St. Louis, was destroyed by a series of explosions and fire, Aug. 8. The damage is estimated in excess of $100,000. Six buildings were destroyed and the machinery in them ruined. While the ruins still were smoldering, the company announced that reconstruction of the department would be started at once. A large supply of shells ready for shipment was lost through the fire. Although 300 persons were working in the building destroyed, no one was hurt seriously. Trained by frequent fire drills, the employees left the buildings in order a few minutes after the first explosion. The accident, President Franklin W. Olin of the company said, will delay the manufacture of shells for about a month or six weeks.

The Bureau of Foreign and Domestic Commerce, Washington, has issued a note of warning to users of the World Trade Directory published by the Department of Commerce and Labor in 1911. This directory contains names of some companies in neutral countries whose names now appear upon the enemy trading list. American firms engaged in foreign commerce are advised to write for a copy of the enemy trading list, which will be furnished by the Division of Information, War Trade Board, Washington.

Economic Factors Connected with Storing

Proper Quantities of Materials and Supplies to Keep in Stock—Consideration of the Maximum and Minimum Limits

BY H. B. TWYFORD*

SITUATIONS have arisen in the recent strenuous times which have made question regarding storage of raw materials and manufactured articles the most prominent issue in many commercial transactions. To store or not to store has got to be settled on a more scientific basis, and this will be the remedy for some of the irregularities in supply and demand. Irregularity in the supply of material is not always owing to actual shortage or surplus, but to hesitancy to store by some concerns and a tendency to excessive storage by others.

Too often the storekeeper is looked upon as a man whose duties are exclusively physical. He is not supposed to have a thinking job. Yet he is in complete control of a very large proportion of the wealth of many concerns. If he is not in complete control, it is because of lack of ability and vision on his part, or because he is not given a standing commensurate with that to which he is entitled.

The Time Element in Storage

Time is the great enemy of goods in storage. Efforts are unceasingly made in all commercial transactions to keep costs at the lowest point, but time is adding to these costs every day and 24 hr. a day for every article in the store room. Time is, therefore, one of the great storage problems. This is evidenced by the lower cost of goods which pass direct from the producer to the consumer without being subjected to any storage process.

There is but one way time can render a service of a favorable nature to goods in storage, and that is through a change in price which would increase the intrinsic value, but considerations of this character do not alter the influence which time has on the storage function.

A good storekeeper would carefully weigh the economic factors which are continually adding to the cost, and the physical factors which may be lowering the value of the goods under his charge. Having by scientific calculations determined the maximum amount to carry in stock anything in excess of this entails expense and added cost, the burdens of which must be spread and distributed over all other goods in the stores. Whenever a purchase is contemplated in excess of known storage requirements, the considerations mentioned compel close attention, because they represent the storekeeper's bill of costs, and these costs must be set against the lower purchase price, or against the appreciation in price it is hoped to gain.

Obsolete Materials

Crude raw material practically never becomes entirely obsolete. A manufacturing plant may discontinue the use of a certain raw material, but that renders it obsolete only so far as that particular establishment is concerned. It may still be in demand by many other concerns. Just as soon as any crude raw material goes through a manufacturing process the danger of its becoming obsolete increases. As soon as finished products go through many such processes, it follows that greater care must be exercised in such cases. To illustrate, suppose a manufacturer is using brass sheets and suddenly decides to substitute aluminum sheets; the brass sheets could scarcely be considered obsolete if they were of standard gage and size. If, however, the brass had been subjected to an additional manufacturing process and pressed or spun into special shapes, it might become entirely obsolete.

It is imperative, therefore, that all obsolete material be quickly disposed of. It is better, however, never to let obsolete material accumulate. If an infalliable system could be devised for fixing maximum and minimum limits it would obviate any danger of having in the stores surplus or obsolete material, but this is an impossibility. There is at some time in every storeroom obsolete material of some kind and to prevent this a close study and constant watch must be kept of the maximum and minimum limits set for governing the quantity of each item in the storeroom.

The storekeeper of a manufacturing plant does not want to do too much worrying about price fluctuations. Scientific rules are possible for storeroom operations and for determining the maximum and minimum quantities to keep on hand. If the storekeeper does not maintain a rigid adherence to these rules, the fundamental economic factors on which the rules are based are thrown to the winds. He should not commence pondering whether certain price fluctuations warrant his increasing or decreasing his storekeeping problems, because it may bias his judgment on purely storekeeping problems. It is better to let the purchasing agent deal with questions of price fluctuations and market conditions.

When the high and low limits have been definitely fixed, it is the proper time for other factors to be taken into consideration, but until they are fixed external considerations should not be considered, because the limits are purely problems of internal management. It may become necessary at some time to consider the advisability of disregarding the safety limits set by the inexorable demands of the production department and the economic factors connected with good storage. But when such occasions do arise it is usually because of purchasing problems. It is then that the storekeeper must be called into consultation, and he must be prepared to demonstrate his storage costs and problems in aiding and assisting a decision regarding the contemplated departure.

Maxima and Minima

The terms maximum and minimum, in relation to goods in storage, are the most important features in storage problems. The main features to be considered are as follows:

1.—The needs of the business.

2.—The minimum quantity which can be kept in the storeroom without endangering the suspension of factory operations, or in the case of a jobbing house the normal requirements of customers.

3.—The cost of storing.

4.—The available storage space.

5.—The length of time required to obtain the material.

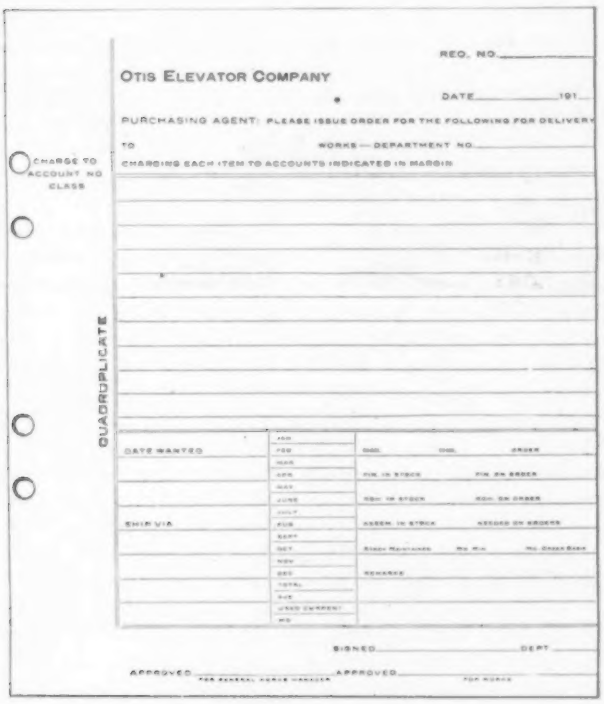
6.—The quantity which can be purchased most economically.

*Purchasing department Otis Elevator Co., New York.

7.—The financial position of a concern may have some influence in certain cases.

For every item in every storeroom there is an exact quantity which is a safe minimum. Every time this is exceeded, rent, interest, insurance and every other economic factor is working against the storeroom. If it were possible to replace immediately the quantity taken from the storeroom with a fresh supply, an ideal condition would exist, and the only factor to be considered would be the minimum quantity one should carry. But this is an impossible condition, and to provide a margin of safety a maximum quantity must be fixed.

Perhaps the establishment of a minimum is not so important for a supply house as it is for a manufacturing plant, and perhaps the rules governing the minimum are not so rigid. The quantities sold in the past can be accurately determined and forecasts of sales for given periods should give close estimates of future demands. From these calculations a minimum can be established.


REQ. NO.

OTIS ELEVATOR COMPANY

DATE 191

PURCHASING AGENT: PLEASE ISSUE ORDER FOR THE FOLLOWING FOR DELIVERY

TO WORKS — DEPARTMENT NO.

CHARGE TO ACCOUNT NO CLASS

CHARGING EACH ITEM TO ACCOUNTS INDICATED IN MARGIN

QUADRUPLICATE

DATE WANTED

SHIP VIA

SIGNED DEPT

APPROVED APPROVED

Requisition Drawn by the Storekeeper, Showing Method of Indicating Maximum and Minimum and the Monthly Consumption for the Preceding 12 Months. This information is valuable in purchasing

The fact is too often overlooked that the cost of a manufactured article does not begin when the workman starts operations, but the initial item of cost is the price paid for raw material. From that point the cost piles up in a succession of accretions which follow each other in regular rotation. Storage costs must take their proper place and be absorbed into the cost of the manufactured articles.

The production manager has to consider the output of his factory, whether this output is uniform throughout the year and whether any manufacturing changes are contemplated, which are likely to make any change in the rate of output or change in the character of the material. Having determined these points in reference to all articles he is making, he can then compile a schedule of his raw material requirements. Each item in this schedule must be reviewed at periodic intervals. Failure to do this is frequently the cause of shortages, or the accumulation of obsolete material.

The storekeeper being furnished with these schedules, it then becomes his duty to have always on hand the raw material to supply the demands of the factory. For example, the production manager may specify his requirement of a certain material at 500 lb. per week. The storekeeper must then determine the amount he must keep in the stores to satisfy this demand. For the economic reasons already given, every calculation of the storekeeper must keep in view the maintenance of his stock at the lowest level which will enable him to meet the production manager's requirements.

The difference between the minimum and maximum quantities in the stores is the factor of safety. If the strain on the minimum reaches undue proportions it must be strengthened. By maintaining the factor of safety at the same ratio it would automatically increase the maximum. There are times caused by unusual conditions and circumstances which call for a very liberal increase in the factor of safety, and some of these are very difficult to handle.

Assuming that a storekeeper is maintaining two months' supply as a minimum for a certain raw material, with a maximum based on the estimated requirements of the shop for three months, it may be necessary to alter radically the maximum if delivery conditions become exceptionally bad. There have been times when it has been impossible to obtain some materials in less than six, nine or even twelve months. This means that the purchasing agent must contract ahead for these periods. There is a grave danger in some cases in doing this, particularly if the product of the factory is liable to change, or the regularity of the output is uncertain, because with his minimum stock of two months and the quantities contracted for ahead the storekeeper may have a year's supply of raw materials to take care of with an indefinite prospect of the shop needing it within the time limits mentioned. Situations and conditions such as these demand the most thoughtful treatment.

Two maximum limits are used in the operation of some stores. The lower one represents the maximum amount of materials which must be in the storeroom at any time, while the higher one represents the maximum amount requisitioned, but not delivered into storeroom. In these cases the lower limit is inflexible, but the higher limit can be made as flexible as necessary to meet delivery conditions. By way of example, we will assume the needs of a business require a stock of 50 tons of No. 16 gage steel sheets 36 x 96 in. as a minimum, and owing to space conditions the stock of this material must never exceed 75 tons. Here we have two inflexible limits, and it might be possible in normal times for the storekeeper to requisition, and the purchasing agent to buy and procure delivery without breaking through the barriers set in either direction. But it is not always possible to do this, and a flexible maximum must be arranged.

The illustration given is a very simple one. In actual practice much more complicated problems arise even in normal times. Continuing the discussion of the example given, the flexible maximum must be fixed to meet the market conditions. Assuming that the difference between the limits, which in this case is 25 tons, represents one month's consumption, then the buyer always has this length of time to replenish the stock, but it may become impossible to procure deliveries regularly enough to maintain this, or the buyer may find he can purchase 200 tons at much more favorable prices. Thus it becomes necessary to determine a flexible or buyer's maximum. In such cases we have first the minimum limit set as the least amount which must be in the storeroom at any time. Next we have the

limit set as the maximum amount to be in the storeroom, and thirdly we have one maximum amount which may be purchased. The difference between the second and third limit is set to give the purchasing agent freedom of action. He can use all the art of his profession within those limits. He can buy or not buy, but he must obtain delivery as and when storeroom conditions demand.

The storekeeper's calculations must be accurately made on the following points: He must figure the exact time required to receive, inspect and store each item, so that he may be able to specify on his requisition to the purchasing agent the exact date on which material must reach the establishment.

The fixing of minimum and maximum limits has been called scientific guessing, but economic reasons demand as much science and as little guessing as possible. Very close figures can be prepared for any storeroom. It has been shown that important factors control the establishment of a minimum, and the flexibility essential in establishing the maximum is largely caused by the freedom of action necessary in buying and by delays in procuring delivery.

Psychology in Storing

A full warehouse and an abundance of goods induce extra efforts on the part of salesmen. For its psychological effect this is worth something. With a depleted stock the activities of salesmen are liable to slacken. The worker in a factory will also slacken his efforts if he sees very small quantities of raw material in front of him. This is a well-established fact, although the worker may be unconscious of it, and no doubt many would deny it.

Purchasing and Storeroom Relations

The purchasing agent must keep the storekeeper advised of delivery conditions. The storekeeper has, therefore, on one hand a schedule of quantity requirements from the production manager and a schedule of time requirements from the purchasing agent. Some items may be freely obtained at a few days' notice, others may take weeks, and others months. In all these instances changes are liable to occur, but the purchasing agent should sense the changes from market indications and give due notice to the storekeeper to enable him to prepare his requisitions a sufficient length of time ahead of actual needs to permit the purchasing function proper scope and to ensure delivery at the specified date.

Theoretically these may look like comparatively easy problems, the solution of which should offer

Typical Receiving Department, Showing the Counting and Weighing of Articles

Section of Storeroom Where Small Parts are Kept, Showing Arrangement of Bins. The small articles are automatically counted on this machine

no difficulties, but in practice they are not so simple. Many of the calculations made do not materialize in the manner estimated. It is necessary, therefore, for the purchasing agent to consider the variations and how to overcome them. Assuming that he has entered into a contract for a staple material to be supplied in quantities of uniform amounts at regular intervals to conform to the storekeeper's minimum still, he may suddenly find the regular supply stopped. Strikes, breakdowns, embargoes have played havoc with deliveries in recent strenuous times.

Such contingencies must be provided for and auxiliary sources of supply located and kept in view, so that the deficiency can be made good. If this shortage has to be supplied by purchases from local warehouses at a higher price than for mill shipments called for in the contract, then it is a question as to whether it is a more economical proposition to pay the higher price or raise the storekeeper's maximum limits. If goods are bought from warehouse and afterwards stored by the buyer, he is paying storage costs twice, that is both the seller's and his own. Recourse to maximum increases adds to storage costs, but enables a larger stock to be carried to tide over temporary shortages.

Some mention of the production problems is necessary to emphasize their influence on the storeroom. An example has already been cited of production requirements, but that example contemplated a uniform demand on the storeroom for a staple material. When manufacturing one article or machine, such as a typewriter, it is comparatively easy for the production manager to specify his needs, both in respect to quantities and time, because he should know accurately his rate of production, but it is much more difficult and complicated when the output of a factory consists of many different types of machines, some of which may be called for and constructed at irregular intervals.

The production manager would naturally wish to be in a position to make promptly any of the various machines sold by his establishment. There are, however, many instances in which certain large machines may be built several times within a few weeks, and there may be an interval of some months when but very few are constructed. This condition of irregularity is difficult to meet as far as providing the raw material is concerned. The production manager must base his estimates very

largely on information from the sales department. He has got to look far enough ahead, but at the same time if he should specify requirements too far in advance and very few sales were effected in that period, the storeroom might get loaded up with a vast amount of slow-moving raw material.

The storekeeper can be of great assistance in such matters. He can give the production manager accurate figures as to the amount of space available for such material, and he can also give him exact figures of the storage costs for that material per day, week or month. This is valuable information for a production manager, and of considerable help in the circumstances quoted.

INJURIES AT STEEL PLANTS

First-Aid Principles and Record of Hospital Service at Thirty-seven Carnegie Plants

In discussing the technique of first aid, minor and major surgery incident to industrial emergency and welfare work, before the last meeting of the National Safety Congress held at New York, Dr. A. W. Colcord, secretary Railway Surgeons' Association, of Clairton, Pa., outlined as follows the results accomplished along these lines at the works of the Carnegie Steel Co., with which he is also identified:

It is obvious that all injuries to workmen should be treated at the earliest possible moment. Yet I am convinced after a number of years spent in training first-aid classes that a wound, fracture or burn should seldom be treated by any one but a trained nurse or a surgeon. In the Clairton group of mills of the Carnegie Steel Co., there has not been a time during the past four years when there was any possible excuse for a layman to dress a wound. The plant hospital can be reached from any part of the works in 10 minutes.

The teaching of first aid classes has gradually been boiled down to four things: (1) hemorrhage; (2) asphyxia and shock; (3) transportation of injured, how to get an injured man to the proper place for treatment with a maximum of speed and with a minimum of pain and trauma; (4) What not to do: Not to dress a wound or burn, not to meddle with a fracture or dislocation, not to try to remove a cinder imbedded in the cornea with a sharp pencil or a toothpick, to let it alone.

The emergency hospital at Clairton has a waiting room, a redressing room, an operating room, a ward, a nurses' room, bathroom, hall for supplies, an X-ray room and pathological laboratory, a furnace room, morgue, and janitor's room. There are terrazzo floors, vitriolite walls, and the best of modern plumbing and surgical and hospital equipment.

Three trained nurses are employed—not just ordinary graduates but selected on account of peculiar fitness, specially trained for this work. They can suture a wound, dress a burn or apply a bandage or splint better than the average doctor and as well as most surgeons. They can be trained to use the microscope for blood counts, etc., develop x-ray plates, make urinalyses keep accurate case records, give anesthetics, treat shock, hemorrhage and asphyxia till the surgeon arrives and treat the large group of lesser injuries, having them report to the surgeon at the next daily dressing hour. Including welfare cases, 108 persons are given attention in this hospital every 24 hr.

Each of the 37 plants of the Carnegie Steel Co. has a well equipped emergency hospital, seven of them being of the type of the one at Clairton. At these various plants are 50,000 men and 35 surgeons. Dr. Sherman, chief surgeon in October, 1915, reported for five years service, 77,000 wounds treated with only 90 infections. This included 3500 of the author with no infection. They did not include those who come for the first time with wound already infected or those who removed their own dressings and so caused an infection. We are, however, gradually educating the men away from such things.

Such a record can only be made with the whole machinery of the company working as an efficient unit. It means a capable, and tireless chief surgeon; loyal works surgeons; careful selection and training of the best nurses, and back of all the Carnegie Steel Co. with an extremely liberal policy—anxious to do everything for the welfare of its employees.

With plants scattered from Columbus, Ohio, to Newark, N. J., the surgeons attend surgeons' meetings regularly and work for the success of the whole unit with the zeal of a football eleven. Three years ago a committee of surgeons, appointed by Dr. Sherman, prepared a standardized technique for all the mills. This is elastic enough to allow for individuality but the work is fairly uniform in all the mills. The men are furnished with dark glasses, crutches, wrist and ankle braces, artificial limbs, finger cots, and any surgical appliances deemed necessary by the surgeon to treat any injury received by a man while at work. When employed, moreover, each man is stripped and carefully examined and an accurate record of the findings is kept.

All this care of injured employees may seem at first thought to be expensive, and it is. The first motive in doing all this for the men was a humane one, but the Carnegie Steel Company and other corporations who have been pioneers in this work have found that it pays. Men are got back to work quicker, there is less compensation to pay, and best of all the men appreciate what is being done for them and pay it back in loyalty and good will.

Heavy Imports of Tin

WASHINGTON, Aug. 13—Imports of tin into the United States broke all records last year. Statistics reported by the Bureau of Foreign and Domestic Commerce for the year ending June 30, 1918, show that the total imports of metallic tin were 69,731 gross tons as compared with 67,529 tons in the fiscal year 1916—the previous high-record year and 44,722 gross tons in the fiscal year 1914—the last pre-war year. Interesting to note is the fact that while in 1914 our importations of tin from the United Kingdom and from the Straits Settlements formed 90 per cent of the total, in 1918 they amounted to only 55 per cent of the total. The loss was compensated for by heavier shipments from Bolivia, China, Australia, and the Dutch East Indies. The growth of our infant tin-smelting industry is shown by the fact that approximately 13 per cent of our 1918 imports came to us in the form of ores, mostly from Bolivia.

Purchasing agents of more than 100 manufacturing concerns of Milwaukee and southeastern Wisconsin have organized a local branch of the National Association of Purchasing Agents. Officers have been elected as follows: President, F. E. Francis, Patton Paint Co., Milwaukee; vice-president, G. H. Money, Federal Rubber Co., Cudahy; secretary, Charles E. Stone, Chain Belt Co., Milwaukee; treasurer, G. A. Platz, Horlick Malted Milk Co., Racine; directors, Philip Knoll, Bucyrus Co., South Milwaukee; W. C. Morganroth, H. W. Johns-Manville Co., Milwaukee; Fred T. Benz, Milwaukee Electric Railway & Light Co.

The Fulton Steel Corporation, 149 Broadway, New York, is building a 14-in. rolling mill at Fulton, N. Y. The building is to be 60 x 240 ft. An equipment of boilers for operation of steam hammers is also being put in. The mill will roll rounds and flats for tools and special steels. The T. W. Price Engineering Co., Woolworth Building, New York, is the engineer.

The standardization of patterns as a means to increase production and reduce costs was urged by John Firth, vice-president Cammel Laird & Co., Ltd., Sheffield, newly elected president of the British Foundrymen, at its recent convention.

Automobile Industry on War Basis

Motor Trucks Given Preferred Place—Manufacturers of Passenger Cars Advised to Convert Their Plants According to Government's Policy

WASHINGTON, Aug. 13—Motor trucks have been given a preferred place on the list of American industries. Under special restrictions they are to receive priority in fuel and steel, according to an announcement made by the War Industries Board. But the creation of new plants or the expansion of existing plants for the manufacture of motor trucks is held to be unnecessary and undesirable inasmuch as existing facilities are ample to produce all the trucks required for essential uses or for which steel can be furnished.

Edwin B. Parker, Priorities Commissioner of the War Industries Board, has prepared for distribution to manufacturers of motor trucks a circular outlining the assistance the board will extend to them in the manufacture of their product. The circular sets forth that in so far as motor trucks are used directly or indirectly for war purposes, they are a war essential, and their production for such purposes should be facilitated and, further, that in so far as trucks are employed in essential uses in civilian industry, they constitute an important transportation medium, and curtailment for such uses should be avoided as far as possible.

Tremendous Demand for Steel

After pointing out the tremendous demand for steel and the necessity for its conservation, the circular states that any manufacturer of auto trucks whose plant now is or in the future shall be exclusively devoted to manufacturing products being or to be absorbed directly or indirectly by the Government, or in other uses of essential importance, may have such plant given a class B-4 rating for its steel requirements.

The circular states that the demand for iron and steel is such that no guarantee can be made to the motor truck or any other industry that its steel requirements or any portion thereof will be met. However, the members of the motor truck industry, complying in good faith with the pledge of co-operation required, will be accorded the preferential treatment mentioned in procuring their supplies of fuel, iron and steel.

The pledge of co-operation to be given by any manufacturer who desires to be placed on the preference list for its fuel requirements, or who desires to be placed in class B-4 for its steel requirements, should be in the following form:

> The undersigned hereby pledges itself (1) to use only in the manufacture of motor trucks or repair parts for motor trucks the steel suitable therefor which is now in its possession or which may hereafter come into its possession; (2) to sell no motor trucks of its manufacture except (a) for essential uses, as that term has been or may be defined or applied by the Priorities Division of the War Industries Board, or (b) under permits in writing, signed by or under authority of such Priorities Division; (3) to sell no user an unnecessary number of motor trucks even for essential uses; (4) to discourage the purchase of any motor truck to replace a usable truck already in service and to give maximum encouragement to the repair of trucks; (5) that this pledge shall bind not only the undersigned but also its branch houses, subsidiaries, dealers, brokers, factors, commission merchants and all other selling agencies; (6) to make no delivery of any motor truck to anyone for resale, either directly or indirectly, until such one has filed with the undersigned its pledge of co-operation in writing; and to make monthly reports as required by the War Industries Board to the Automotive Products Section of said board, or otherwise as said board may direct.

The manufacturer must also require from anyone to whom he delivers a motor truck for resale a subsidiary pledge in much the same terms.

Passenger Car Curtailment

Hugh Chalmers, representative of the National Automobile Chamber of Commerce, appeared last week before the War Industries Board and presented the resolutions adopted unanimously by the automobile manufacturers at a special meeting in Detroit. By these resolutions the manufacturers voluntarily agreed to curtail the production of passenger cars 50 per cent, beginning Aug. 1. Mr. Chalmers also presented a tentative form of pledge which the automobile manufacturers are ready to make concerning their output. The War Industries Board, in replying, has advised manufacturers of passenger automobiles to convert their plants to 100 per cent war work as rapidly as possible, and to place them on that basis not later than Jan. 1, 1919. A letter addressed to the National Automobile Chamber of Commerce in part follows:

"We are in receipt of and have given very careful consideration to your communication of Aug. 8 embodying the resolutions passed at your meeting at Detroit, Tuesday, Aug. 6. We note that the manufacturers have voluntarily agreed among themselves to curtail the production of passenger cars 50 per cent. While this is clearly a step in the right direction, and furnishes a basis for each and all of the manufacturers without further delay to make appropriate reductions in selling, general and overhead expenses, still it is only a step and further curtailment is inevitable.

"Fairness to your industry impels us to frankly state that the situation as it is presented to us to-day indicates very clearly that there will be little if any of the principal materials required in the construction of passenger cars available for non-war industries after the war requirements shall have been provided for, and the War Industries Board cannot at this time make any promise whatsoever regarding the supply to your industry of steel, rubber or other materials for any definite period in advance.

"We strongly believe that it is to the best interest of your members and all other manufacturers of passenger automobiles to undertake to get on 100 per cent war work as rapidly as possible and not later than Jan. 1, 1919, for in no other way can you be sure of the continuance of your industry and the preservation of your organization."

Although the communication states further action will be taken when the inventories are returned, little promise is held out by members of the War Industries Board to the automobile industry unless its entire manufacturing capacity is devoted to war work. On the contrary, it was stated by one member, allocation of steel to the industry has been stopped, and those who were far-sighted enough to obtain stocks of steel prior to the restrictions on delivery in all probability will have their supply taken by the Government, to be turned over to war industries short of it.

Louis Greenspon, president Joseph Greenspon's Sons Iron & Steel Co., St. Louis, dealers in scrap iron and steel, after six appeals for exemption from military service on the averment that his occupation was a war essential, has been ordered into training and sent to Camp Funston. The case was long and bitterly contested. He was ordered to entrain several times before the last action was taken, and left for Camp Funston Aug. 6.

For industrial housing developments the committee of the American Concrete Institute, Leslie H. Allen, Aberthaw Construction Co., Boston, chairman, recommends for those of small scope the use of the concrete block stuccoed outside and for schemes of 50 or more houses the monolithic and also pre-cast construction.

The War Trade Board, Washington, announces that applications will now be considered for the exportation of all commodities to Sweden.

ESTABLISHED 1855

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Luxuries and Necessities

The opinion is entertained by many that the fourth Liberty Loan, now impending, cannot be a success except by extensive borrowing on the part of the subscribers. The reserves of the people have been largely exhausted, yet the new loan is to be larger than any of its predecessors. The particularly approved method of paying for Liberty bonds is by saving, but it is evident from the circumstances that the depletion of the people's reserves and the increase in the size of the loan could not be balanced except by a very great increase in the amount of saving, an increase so great that at the moment it hardly seems possible. Borrowing by subscribers to bonds, however, is an influence toward inflation. The stage of "healthy inflation," which Mr. McAdoo long ago referred to as desirable, has long been passed.

A very common idea is that the requisite saving should be in "luxuries." If, however, the saving is confined to the thing the saver himself regards as a luxury it cannot go very far. The individual is little disposed to consider as luxuries the things he consumes or buys. To him the thing usually appears as a necessity. It is what others consume that he considers luxuries.

It has often been said that the luxury of one day becomes the necessity of the next. The trend must now be reversed. Some things that have grown to be considered necessities must again be classed as luxuries.

In the circumstances, the War Industries Board must come to the aid of the Treasury Department. Daily the board has to decide questions which really hinge upon whether the thing considered is a "necessity" or a "luxury." It must decrease the scope of the former term and increase the scope of the latter. The board's angle in viewing an activity is the material and man power involved in its production; but what is not produced cannot be consumed, and the board may well pay great attention to the matter of consumption and of saving. It is more important to force saving than to encourage manufacturing activities which promise a benefit to the work of waging war only through their producing profits that can be taxed. We do not have industries because we want to have something to tax. We levy taxes because the taxable exists. The conception of the meaning of the term luxuries must be expanded. Many of the necessities of peace times become the luxuries of war times.

Steel Making and Finishing Capacity

There has been discussion of late whether it would be desirable as a war measure to provide the necessary facilities for producing more steel. While the estimates of steel requirements for war and essential peace purposes are all more or less bewildering they have been thus far quite consistent in one respect, they never decrease. To employ man power, materials and transportation facilities in new construction could only be regarded as enterprising in case the need for additional steel was of paramount importance, and that, of course, is for the authorities at Washington to judge. The resources of the country are being employed and directed by them. The iron and steel industry can merely study its condition and report the physical facts as they are found.

The vital fact in connection with the problem is this, that the war demand for steel is of a nature different from the peace demand. It requires steel in different proportions, as to character of the finished product, than obtains in peace times. Therefore, when the industry was fairly well aligned in its different branches for peace demand the alignment is not in all respects fitting to the war demand.

The steel industry has always possessed some flexibility, as to the manner in which it could distribute its steel output among the various finished forms. There has been, perhaps, an average excess of 10 to 20 per cent in the finishing capacity as compared with the steel ingot making capacity. At the present time, however, the demand for shell steel is taking, or will take, half a million net tons a month from the supply of steel, yet engaging for its rolling very little finishing capacity. Due to the erection under pressure of shipbuilding demand of many plate mills, there is, and will be still more in the future, a large subtraction of steel from other finishing departments. The result is that many finishing departments are supplied with steel only to the extent of a 60 per cent

or 70 per cent operation. As matters now stand, it will not be long before the pipe mills, merchant mills, wire mills and sheet mills, taking them in a lump, will have no more than enough steel to operate at 60 per cent of capacity. If a greater output of steel in these forms could be utilized to advantage, then the increased production of the finished material can be obtained simply by increasing the steel-making capacity, with what necessarily goes before, possibly with the addition of a little blooming mill capacity and perhaps to advantage some slabbing mill capacity.

To operate more steel-making units, more pig iron is imperative. More scrap would be better, but that cannot be found. The supply of pig iron is somewhat scant as it is, merely for the domestic situation, and there have been heavy requirements, with perhaps still heavier to follow, from Great Britain, France and Italy. The burden is upon all to help win the war, and if these countries are willing to help by taking our pig iron and converting it into munitions the pig iron should certainly be furnished. There should be, therefore, more blast-furnace capacity added than steel-making capacity.

To supply the blast furnaces with raw materials is relatively a simple matter. In the matter of coke, this year alone bids fair to see an increase in actual—not rated—capacity of more than 100,000 tons a week. By the end of the year by-product coke output should be at the rate of about 30,000,000 tons a year, with more capacity to come in 1919. In 1916 a production of 39,400,000 tons of pig iron was compassed when the output of coke was 35,500,000 tons beehive and 19,000,000 tons by-product. The beehive ovens, with trifling exceptions, are still in existence, and merely need to be kept in operation a little longer. It is a question, not of finding coking capacity, but of finding coal. Both coal and coke must be conserved to the utmost to serve the needs of the iron and steel and other essential industries.

As to an increased supply of Lake Superior ore, the governing facts seem to be that before the opening of Lake navigation it was computed that a season movement down the Lakes of 55,000,000 tons would carry the tributary furnaces over to the season of 1919, by reason of the curtailment in ore consumption that occurred in the winter, and through reduction in the unnecessarily large stocks that had been carried. The statistics of Lake movement to Aug. 1 presage a total season movement of 65,000,000 tons, providing, apparently, 10,000,000 tons to carry additional blast furnace capacity well into the season of 1919.

Thus to provide additional supplies of finished steel of certain descriptions, all that is especially necessary is more open-hearth furnaces and more blast furnaces. The work involved would be less than one-third that necessary to establish a complete integrated operation, with ore mines, Lake vessels, coal mines, coke ovens, blast furnace, steel-making capacity and steel-finishing capacity.

Such new construction, however, would be a white elephant on the hands of the iron and steel industry after the war. The beehive ovens, utilized in the emergency, would not do for continued economical operation. The blast-furnace capacity would be quite in excess of requirements, given a normal supply of scrap for the steel works, and the steel ingot capacity would be greatly in excess of the finishing capacity that would be in existence or would be called upon in a natural market to operate. The cost of the war facilities, moreover, would be exceptionally high. In such circumstances the only proper course would be for the Government to finance the projects, or take care of the rapid amortization in some suitable manner. The Government has undertaken to finance some recent by-product coke construction, although the case there is very different. The by-product ovens are certain to be quite useful after the war, the only question being as to their value then compared with the high cost of construction now.

Function of Machine-Tool Dealers

It is hard to believe that the Government, in pursuing its policy of placing a ban on commissions and eliminating the operations of middlemen, has any intention of restricting the activities of legitimate machine-tool dealers who, as direct territorial agents of tool builders, have been for years the distributing mediums for the latter. Such dealers may almost be considered a part of the organization of the tool builder who for good economic reasons sells his product in that way. They practically constitute a branch of his business. The dealers referred to not only have exclusive selling privileges in their district, but they receive their commission if a machine enters their territory, whether or not they are active in making the sale, and this for good reasons as will be shown.

The dealer-representatives maintain trained selling forces, offices and warerooms; they advertise and spend money in many ways to promote the business of their principals. Their salesmen and engineers watch the field closely, are competent to recommend a machine as best adapted for doing specified work, know how a machine should be installed, and how to rectify troubles that may develop. On receipt of a message by telegraph or telephone, the dealer quickly despatches a man to an arsenal or Government plant, and he is as truly the representative of the tool builder as if he had come direct from the latter's factory.

This system of selling developed because there was a legitimate place for it, and because it made for economy and good service. Yet, as noted in THE IRON AGE of July 25 on page 201, officials of some of the purchasing bureaus at Washington assert that however useful the services of such agents may have been in times past to the manufacturing concerns they represent, they are still middlemen, and the Government desires to establish direct relation with manufacturers for the purpose of arousing their interest in Government work and of inducing them, if need be, to undertake the production of goods not previously made.

The dealer agent or representative, who maintains the selling and service machinery to which reference has been made, does this out of his com-

pensation from the manufacturer. Having several different and non-conflicting lines, he is able to give the service at a cost which would be impossible were a single manufacturer to attempt to maintain such an organization. Of course, there are some exceptions where manufacturers produce a varied number of tools, where some special service is required, or they prefer to be independent for individual reasons. But it will be found that the dealer who acts for a manufacturer meets the prices of the manufacturer who sells through employees on his own payroll. It is not a matter of a higher price to the buyer, whether the buyer be the Government or a private individual, but a question of distribution of selling cost.

Such being the case, the comment made officially in this connection that "we are at war," and the intimation that the general agent must go are far from justifying the course that has been taken, and the continuance of the Government purchasing policy on the lines indicated may result in undermining a selling institution that will be much needed in after-war competition.

All the People vs. Some of the People

With what was once the great Russian Empire shattered, with revolutions breaking out in many directions and with the people suffering from all the ills that can afflict mankind, the declaration of rights and the constitution prepared by a special commission for adoption by the so-called fifth Pan-Russian Congress of Soviets has just been published and furnishes the latest evidence of the internal weakness which has brought about the present chaotic conditions in Russia. This remarkable document starts with the following declaration:

We, the laboring people of Russia, workmen, peasants, cossacks, soldiers and sailors, united in the councils of the Workmen's, Soldiers', Peasants' and Cossacks' Delegates, declare in the persons of our plenipotentiary representatives, who have assembled at the Pan-Russian Congress of Soviets, the following rights and duties of the working and despoiled people:

The economic subjection of the laboring classes by the possessors of the means and instruments of production, of the soil, machines, factories, raliways and raw materials—those basic sources of life—appear as the cause of all sorts of political oppression, economic spoliation, intellectual and moral enslavement of the laboring masses.

Contrast the above two paragraphs with the following immortal preamble of the constitution of the United States:

We, the people of the United States, in order to form a more perfect Union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this constitution for the United States of America.

In the one declaration is found the class appeal, the attempt to array in deadly conflict those who have against those who have not. On the contrary, in the preamble to the constitution of the United States, the language indicates a union not of any particular class, but of all who wish to be associated in a great common purpose. One need not read further than the first line of the Russian document to find reason for its rejection—"We, the laboring people of Russia," instead of "We, the people," in the American document. In order, however, to understand how thoroughly unjust, impracticable and outrageous is the proposed constitution, it is necessary to peruse some of its provisions. Not only is holding the land abolished and the loans contracted by the Czar's Government repudiated, but it is specifically declared that laborers and peasants shall be armed, while members of the property holding classes shall be disarmed. In the sections relating to suffrage it is asserted that the right to vote shall be restricted to members of trades associations and among those specifically excluded from suffrage are "persons who employ hired labor in order to obtain from it an increase of profits;" private merchants, trade and commercial intermediaries; the deaf and dumb and "persons who have been punished for selfish misdemeanors."

The mere statement of such provisions is enough to condemn them in the mind of any person who has not been woefully misled; and yet the principles of the Bolsheviki are no worse than much of the propaganda in this country that has found support to a dangerous extent in some large cities and industrial centers. Next to the fighting on the battle fronts of Europe, nothing is more important to-day than the crushing out of all socialistic teachings of the I. W. W. and organizations of a similar character. It is a part of the winning of the war. Issues which have separated men in the old parties are absolutely of no importance as compared with the imperative necessity of preventing anything like Bolshevikism from getting a foothold in this country.

If the view of a British statesman is correct, that Great Britain's attitude on the proposal to enforce an industrial boycott against Germany will be decided to a large extent by the attitude of the United States, American industry will have in its hands the lever by which the whole trend of world commerce may be controlled for some time to come. The reports of the departmental committees of the British Board of Trade on the engineering, electrical, iron and steel, shipping and shipbuilding trades disclose considerable differences among serious minded business men as to the attitude to be taken toward enemy countries after the war. The United States to-day is given over whole-heartedly to crushing Germany's militaristic plans, and no element of the nation more so than that having to do with industry. Whether unanimity as to detailed war aims exists with us to any greater extent than in England is not certain. It is to their credit that the British are doing their best to clarify the problems which are to tax the world's best brains, and it would be reassuring and open the way to beneficial discussions if more publicity were given to our own preparations for the peace table.

Federal Launches Another Ship

The Federal, a 9600-ton steel vessel, slid down the ways last Saturday at the shipyard of the Federal Shipbuilding Co. at Kearny, N. J., Miss Katherine V. Farrell, daughter of James A. Farrell, president United States Steel Corporation, of which the Federal plant is a subsidiary, acting as sponsor. The first ship, the Liberty, was launched at the Federal shipyard on June 19.

NEW GUN PLANT IN FRANCE

United States Government Will Build One for Relining Large Cannon

WASHINGTON, Aug. 13.—Plans have been approved by the Chief of Ordnance of the War Department for the establishment in France of one of the largest gun relining plants in the world. It will be built by the United States Government for relining the heavy railroad guns in use by the American forces. The project for this relining plant is one of the largest undertaken by the Ordnance Department, and calls for the expenditure of between $25,000,000 and $30,000,000. In size, it will be comparable to the Krupp works at Essen, Germany. The machine tools alone will cost between $12,000,000 and $15,000,000, and will consist of gun-boring lathes, engine lathes, rifling machines and grinders.

A large number of these gun-boring lathes are designed for a 102-in. swing. To make these lathes there is under construction at one of the machine tool plants in this country a giant planer, the base of which is to be 500 ft. long. This planer is to cost $450,000 and the lathes it will help make will approximate, in the aggregate, $6,500,000.

Steel Ingot Output in July

The daily rate of production of steel ingots in July showed a slight decrease from that for June, according to statistics compiled by the American Iron and Steel Institute from reports submitted by 29 companies which in 1916 made 88.14 per cent of ingot output. A total of 3,113,635 gross tons was so reported for July, as against 3,083,446 tons, the revised figures for the month of June, and 2,939,115 tons for July, 1917. For the 25 working days in June the daily rate was 123,338 tons, while for the 26 working days, omitting July 4, in July, the daily average was 119,755 tons, or 2.9 per cent less. July, 1917, was a month of five Sundays, and the daily production rate for that month was 113,043 tons. On the basis of these reports, the July production represents an annual output of 41,984,000 tons, calculated for 309 working days, for the year, but the annual production rate on the basis of the last five months is 42,496,000 tons. The table below gives the ingot production of these 29 companies for the past year in gross tons:

Monthly Production of Steel Ingots

Months	Open Hearth	Bessemer	All Other	Total
June, 1917	2,265,772	809 552	8,605	3.083.929
July	2,152.479	777,171	9 465	2,939,115
August	2.251.013	863,873	8.331	3 123,217
September	2,195.556	770,064	6,639	2.972,259
October	2,475 754	870,494	5,687	3,351,935
November	2 384,218	772.489	9,550	3,166,257
December	2.195,832	524,084	13.806	2.733,722
January, 1918	1,763.356	429,588	10,901	2,203,845
February	1,805 233	454,457	14,051	2.273,741
March	2,331.048	763,255	16,078	3,110,381
April	2,377 974	769,249	16,187	3.163,410
May	2,475 131	796.244	15.858	3.287,233
June	*2.281.718	786,380	15.348	*3.083 446
July	2,311,545	784.997	17,093	3,113.635

*Revised.

May Erect Shell Plants

ST. LOUIS, Aug. 13—(*By Wire*).—A meeting of stockholders of the Laclede Gas Co. has been called for Sept. 10 to authorize increasing the capital stock from $20,000,000 to $40,000,000, "to provide funds for the extension of plants or the purchase of additional plants." This harmonizes with the report that the company is to erect and operate two shell-making plants.

The War Department has authorized every private factory in the United States devoting more than 50 per cent of its total output to ordnance material to fly a specially designed flag. The flag measures 4 ft. by 6 ft. Around the four sides is a red border. Within are three broad panels, the center one blue and the outer ones white. In the center panel is a design in white of the bursting bomb, insignia of the ordnance service.

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"The Iron Age" and Its Readers

In the first six months of 1918 the 26 issues of THE IRON AGE contained a total of 1720 reading pages, or an average of 66 pages to the issue. In the first half of 1917 the average per issue was 62 pages.

We are sometimes told that THE IRON AGE prints so much that the average reader is likely to miss many things that would be of value to him.

The object of the matter that will appear each week in the space headed "THE IRON AGE and Its Readers" is to call attention to articles having special interest in particular fields. It is the habit of our readers to keep THE IRON AGE on file. We have no hesitation, therefore, in referring this week to two articles not to be found in this issue, which deal with matters of first importance just now to many manufacturers:

1. The complete revised rules and regulations governing priority in production, as issued by the Priorities Division of the War Industries Board.—Pages 261-64, IRON AGE of Aug. 1, 1918. Many requests have come for reprints.

2. "Commissions on Government Contracts." A thorough discussion of the Washington order requiring Government contractors to certify that they have paid no commissions to secure business—Pages 200-1, IRON AGE of July 25, 1918.

THE IRON AGE'S Washington letters, dealing with war developments in iron and steel, represent a service of the highest value—this on the testimony of many readers who have made practical use of them.

May Recall Workers from Army Service

Shortage of Labor Receiving Careful Attention at Washington — Method of Obtaining Deferred Classification—War Industries Badge

WASHINGTON, Aug. 13.—Shortage of skilled labor for the war industries of the country has grown so acute that responsible authorities in Washington are discussing the possibility of requiring wholesale reclamations of skilled laborers from the army contingents who have not yet gone overseas. Figures compiled by representatives of the Department of Labor indicate that not more than 10 per cent of the demand can be filled by a further combing out of skilled workers from the less essential industries of the country. The greatest shortage is in boilermakers, machinists, molders, hammermen and diesinkers.

When the Government took over the recruiting of unskilled labor on Aug. 1, it was announced that the question of taking over the skilled labor recruiting would be considered later. It has been considered, but in the face of the present grave difficulties, it is doubtful whether the Government authorities will want to assume that heavy responsibility.

The present situation has been created under the old limited draft. The new draft, with its limits from 18 to 45 years, would make the situation almost catastrophal. That is why the War and Navy Departments ordered all voluntary enlistments and every kind of recruiting stopped so abruptly last week. It was found that the mere prospect of the draft was driving to the recruiting stations thousands of ablebodied, skilled workers whom it would later be impossible to replace. Before the doors of the recruiting stations are opened again, the question of labor exemptions will have been worked out in detail—not by the Army or Navy officials alone—but by all who are involved, especially the War Industries Board and the Department of Labor.

The Non-War Industries

Three methods of trying to work out the present shortage of skilled labor are being studied here. The first is to secure what little more can be obtained in the way of skilled workmen from non-war industries. The second is to plan a "redraft" from the army, by way of exemptions and furloughs for labor. The third is a program of education for unskilled labor, to fill the ranks of the skilled mechanics. The latter is not an easy task, but in the face of the importance of the problem there is nothing impossible about it, and the Government authorities are confident that they will have the fullest support of every industry.

Not only does the new draft make the situation more acute, but the very size of the new army will require a greater industrial support, for equipment and supplies. The oveseas demands of the Allied Governments in Europe have also been increasing, and the vigor of the present military campaign is resulting in a continual stream of heavier demands upon all our resources.

Secretary Baker's Position

Secretary of War Baker has taken a definite stand on the question of exemptions under the coming law. His position is that it should no longer be a case of voluntary yielding to the draft, but that the Government's regulations should be so definitely drawn that there will be no question whether the registrant waives exemption, but entirely a question whether he is in fact exempt. This, he points out, is necessary to keep men from accepting service who are more important in their civilian work.

"What I want to get in the regulations, if possible," said Secretary Baker, "is to have them so that the Government does the selecting, rather than putting it up to the individual. That is, where there is a man who ought to be exempted from the point of view of the national interest, I do not want to put the man in the position of having to claim exemption, but have him only answer some questions of fact and let the rules take care of the classification."

For the same reason it has been ordered that there shall be no recruiting for the army's "Slavic Legion" in any coal mining district.

Deferred Classification

To show how vital the question of reclaiming draft registrants for industrial work has become, the following procedure has been drawn up by authoritative sources on the methods of obtaining "deferred classification on industrial grounds," and "indefinite furloughs for return to industry":

The first thing to do is for the employer to establish his status as a "necessary" industry under rule XVII, Selective Service Regulations. To do this, he should file with the district boards, having jurisdiction over his skilled employees, a general affidavit setting forth the Government contracts which he holds, giving the Government order number, date, description, quantity, and department of the Government by which issued.

In case he has no direct Government contracts but is furnishing material to firms who have such direct Government contracts, he should furnish the district boards an affidavit stating this fact, and accompany it with an affidavit from the concern having the direct Government contracts, which should be scheduled as above. This procedure should result in his concern being regarded as a "necessary" industry.

He should, at the same time, file industrial claims for his skilled employees, making a check mark on the front page of the questionnaire in the box opposite the class of deferment claimed. This would be 2-D if a skilled industrial laborer, 3-L if a foreman, 3-K if a highly skilled expert, or 4-D if a sole managing, controlling or directing head. At the same time, the space next to the bottom on the front page of the questionnaire should be filled out, questions in series 11 should be answered by the registrant, supporting affidavit No. 1 should be filled out by his immediate superior, supporting affidavit No. 2 by the executive head of the enterprise, and finally the registrant's affidavit should be executed.

This questionnaire should be filed with the local board, which will in turn transmit it to the district board for consideration. If properly presented, this procedure should result in securing deferred classification.

The above procedure should also be followed in cases where Government contracts have been received by the employer subsequent to the filing of the original questionnaire, in which case a skilled employee is entitled to reclassification owing to "change of status."

After having presented the facts as above, the employer must then await the decision of the district board. If this decision is adverse in a case where the industry should properly have been regarded as necessary and the man granted deferred classfication, there is open an opportunity to secure the return of such a man after he has gone to camp. This is secured by filling out the inclosed application blanks.

The applications should be forwarded by the employer to the department of the Government from which his contracts emanate. The application, if favorably considered, will result in the enlisted man being sent back to industry on indefinite furlough. Before making such application, it is necessary to wait until the man has received specific orders to go to camp, so that the name of the camp may be stated in the application.

War Industries Badge

As a further incentive to keep laborers needed in war industries from waiving exemptions under draft requirements, the Department of Labor has authorized

a special "War Industries Badge." The design has been accepted. Every effort will be made to have the dies completed and the first batch of medals in readiness by Sept. 1, the date set for inaugurating the award of the Department of Labor's industrial service insignia to deserving civilian war workers. In its announcement the department says:

On and after Sept. 1, every man and woman who is faithfully doing his or her share in producing war supplies will be eligible for this Federal recognition of patriotism, proved by unflagging effort in shipyards, munition plants and factories engaged on Government contracts.

The war industries badge will be disk-shaped, slightly larger than a quarter, and will be attached to a red, white and blue enamel bar 1¾ in. long. Four consecutive months of uninterrupted service in war production will entitle the worker to the first badge, which will be of bronze. Eligibility to the second badge, which will be cast from the same die but made of different metal, possibly silver, will result from eight consecutive months of war service. Award of the bronze badge will be retroactive on properly supported application but no silver badges will be given for industrial war service performed prior to Sept. 1.

For the present, eligibility to the war industries badge will be limited to civilian workers in industries under the supervision of a Government official, or in a plant that is certified to the Civilian Insignia Service by the chief of a Government department as being of sufficient importance in war production to have the badge issued to its workers. In all cases, only those actually engaged on Government contracts shall be eligible.

Work of New York Artist

The artist who designed the badge is Jo Davidson of New York, who is preparing for the French Government a heroic group commemorating the first victory of the Marne. American Industry supporting the Nation's Military Power is the subject of the design which will be stamped in high relief on the face of the war industries badge. The group will be composed of a shipbuilder and a munition worker supporting on either hand the figure of an American soldier in full fighting equipment.

Before the right to issue badges will be granted to any plant that plant must have shown itself in entire conformity with the National war labor policy in all respects. Plants so complying will be authorized to display over their entrances an enlarged facsimile of the insignia, which will be a notice to all workers that war industries badges are awarded in that plant.

Advertising Prohibited

The Department of Labor has again emphasized the prohibition of advertising for unskilled labor. Although at first it was thought that advertising might prove harmless if controlled by the Federal directors of the United States Employment Service for the States, it has finally been determined that no other course is possible than to issue a general order prohibiting newspaper advertising—as well as advertising by any other means—for unskilled labor by employers engaged wholly or partly on war work who have a maximum force, including skilled and unskilled, of 100 men. Railroads are not included as "war work" within this prohibition. Non-war industries may advertise, but may not offer superior inducements or in any way undertake to compete with the Government or war industries. This means, for illustration, that a non-war plant should not in an advertisement offer wages greater than those offered by the war industries of its locality or mention conditions of employment which might attract men from war work.

Similarly, war industries may continue to advertise for skilled labor, the only qualification being the exercise of care that men are not enticed thereby from other war industries or restlessness created. A munition plant, for instance, should not advertise higher rates or special advantages in newspapers which circulate among shipyard workers.

New Ruling on Priorities

The rules governing priorities as published in THE IRON AGE of Aug. 1 have been supplemented by what is known as supplement No. 1 to circular No. 4, which is intended to save time and to afford greater freedom of action, both for the consumer and the producer. The supplement in full is as follows:

"Effective at once, circular No. 4 of the priorities division of the War Industries Board is amended as follows:

"Section 1: Following subdivision (o) of Section 8, add:

"(p) For the operation and maintenance (not new construction, expansion or replacement) of coke oven plants, mines, smelters, furnaces, rolling mills, wire drawing mills, pipe and tube mills, employed in the production of fuels, metals and metal products A-6

"(q) For the manufacture of iron and steel chain...B-2

"(r) For the manufacture of repair parts to shoe machinery and for the operation and maintenance (not new construction, expansion or replacement) of shoe manufacturing plants B-2

"(s) For the maintenance of jobbers' stocks of plates, sheets, bars, shapes, structural shapes, tubular products, wire and wire products, tin plate, heavy hardware, farm implements, mining tools, machinery and equipment, oil well supplies and similar products, upon the strict compliance with the conditions prescribed by section 5 of the bulletin issued by the priorities commissioner and the Director of Steel Supply, dated July 5, 1918 (P. C. form No. 18) and Section V of Circular No. 5 of the priorities division of the war industries board, dated July 22, 1918.....B-4

"(t) For the maintenance of stocks of fabricators of steel to be used in the construction of ships, buildings and bridges upon strict compliance with the conditions prescribed by section 5 of the bulletin issued by the priorities commissioner and the Director of Steel Supply, dated July 3, 1918 (P. C. form No. 18) and section V of circular No. 5 of the priorities division of the War Industries Board, dated July 22, 1918 .....B-4

"Section II: Section 5 is so amended as to hereafter embrace within class C, under the conditions set out in section 9, each order for materials, equipment or supplies for the additional purposes or uses following:

"(a) For the maintenance of existing equipment, for the supply of heat, light, power and sanitation;

"(b) For the necessary supplies and essential repairs (not extensions or replacements) to existing buildings and manufacturing plants;

"(c) For drugs, medicines and medical and surgical supplies;

"(d) For the operation of machine shops and blacksmith shops;

"(e) For wire cloth for screening buildings;

"(f) Nails, screws, bolts and nuts used for any purpose;

"(g) Bale ties, including cotton and hay."

Important Steel Meeting at Washington

WASHINGTON, Aug. 14.—An important meeting of the special sub-committee of the steel committee of the American Iron and Steel Institute will be held here next week with Director Replogle of the steel division, War Industries Board. The purpose is to work out plans to meet the growing steel shortage which is becoming daily more acute, making necessary drastic steps to care for war industries. The meeting will be attended by E. H. Gary, James A. Farrell, A. C. Dinkey, John A. Topping, E. A. S. Clarke and E. G. Grace. The date has not been definitely determined. It is said that the decisions will be among the most important in the present effort of the War Industries Board to meet the situation.

The Florence Iron Co., a New Jersey corporation, with offices at 15 Exchange Place, Jersey City, has been dissolved.

Iron and Steel Markets

IMPLEMENT BARS, 2.65c.

A Concession of $5 a Ton on Government Request

Urgent Demand for War Steel Narrows the Channels of Distribution

The fact that makers of agricultural machinery have secured a reduction of $5 a ton on steel bar shipments in the second half of the year is widely commented on in the steel trade. A concession to this interest on its bar purchases has been no uncommon thing for years. Government price fixing promised to be the end of it. But there was pressure at Washington to prevent any advance in implements to the farmer. The implement manufacturers finally agreed to make no advance if the Government would get them a $5 reduction on bars. The steel men were appealed to and the reduction was granted.

It remains to be seen how far complications in other bar-consuming trades will result from 2.65c. bars for agricultural purposes. But no other industry heretofore has been able to secure the preference given to implement makers and the odds are even greater now with the Government thrown into the agricultural scale.

High heat and humidity cut down pig iron and steel outputs last week, estimates for the Pittsburgh district running from 10 to 15 per cent, while losses at some eastern Pennsylvania plants were considerably higher.

A factor to be counted on as the American army in France grows is the spirit of the steel workers, particularly in mills supplying the chief essentials, as plates, shell steel and latterly rails. There are some signs of the same effort to get output that has been seen at shipyards, but they might be more general.

The estimated July production of steel ingots, based on the compilations of the American Iron and Steel Institute, is 3,531,600 gross tons. The daily rate fell off about 2.9 per cent from that of June, and while the estimated annual production rate on the July figures (counting 26 days) is only 41,984,000 tons, the rate on the actual output of the last five months, or since the winter and railroad handicaps of January and February, is 42,496,000 tons.

A meeting of the special committee of steel manufacturers with the director of steel supply will be held at Washington next week. The decisions to be made, having to do with the recent more pressing demands from abroad, are regarded as among the most important in the present effort of the War Industries Board to meet the situation.

The action of the War Industries Board in denying steel for passenger automobiles is in line with what has been plainly indicated for months as to the narrowing of the channels of steel uses. Some mills, as in sheet and wire lines, are tending to a steady 60 per cent operation.

In the attempt to increase pig iron and steel output, the new by-product coking capacity is strongly counted on. Of the proposal for Government-aided new construction in iron and steel, the main tangible development is in connection with new steel capacity in the Birmingham district.

The pig iron market grows tighter. Inquiry is still large for iron to be shipped in the first half of 1919, but with Government direction so much of a factor the advantage of forward booking is much diminished. Allocations by committee in the past week have been 166,000 tons, of which 99,000 tons was basic iron, chiefly for England.

The situation in the fabricating trade has taken the turn that few fabricators are now bidding on Government work. Able to operate at only a percentage of rated capacity on account of the labor factor, and already well occupied, they find it difficult to meet delivery dates on new offerings, while uncertainties of still rising costs make long-time commitments unusually risky.

Evidence of a growing shortage of scrap is given in the action of the American Iron and Steel Institute committee in putting an embargo for 30 days on shipments of borings and turnings to blast furnaces. An exception is made of stacks producing low phosphorus pig iron, but otherwise these forms of scrap are reserved for iron mills and steel works.

Ferromanganese has been quite active in the past week, one Pittsburgh buyer having contracted for 6000 to 8000 tons of the domestic product. Some domestic ores have not met expectations as to quality and there is likely to be need of all the Brazilian ores scheduled for importation this year.

Pittsburgh

PITTSBURGH, Aug. 13—(*By Wire*).

Nearly all last week, the local temperature ranged from 100 to 104 degrees in the shade, thus entailing great suffering on men employed in steel works, coke plants, blast furnaces, and in nearly all kinds of manufacturing plants. Output naturally suffered a good deal, but exact figures as to how much production fell off are not available. Some estimates are that the output of pig iron last week was 15 per cent below normal, while in steel works, steel and tin plate mills and other plants, the loss of output was 10 per cent or more. It is very evident that the output of pig iron, steel and finished steel products in August will show a considerable falling off as compared with July, which in tin plate and several other products was a record July. This week the weather is still very hot, but is about 10 degrees cooler than last week.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

	Aug. 13, 1918	Aug. 6, 1918	July 16, 1918	Aug. 15, 1917
Pig Iron, Per Gross Ton:				
No. 2 X, Philadelphia	$34.40	$34.40	$34.40	$53.00
No. 2, Valley furnace	33.00	33.00	33.00	53.00
No. 2 Southern, Cincinnati	36.90	36.90	36.90	49.90
No. 2, Birmingham, Ala.	33.00	33.00	33.00	47.00
No. 2, furnace, Chicago*	33.00	33.00	33.00	55.00
Basic, deliv., eastern Pa.	32.90	32.90	32.90	50.00
Basic, Valley furnace	32.00	32.00	32.00	52.00
Bessemer, Pittsburgh	36.60	36.60	36.60	55.95
Malleable Bess., Chicago*	33.50	33.50	33.50	55.00
Malleable, Valley	33.50	33.50	33.50	53.00
Gray forge, Pittsburgh	33.40	33.40	33.40	46.95
L. S. charcoal, Chicago	37.85	37.85	37.85	58.00
Rails, Billets, etc., Per Gross Ton:				
Bess. rails, heavy, at mill	55.00	55.00	55.00	38.00
O.-h. rails, heavy, at mill	57.00	57.00	57.00	40.00
Bess. billets, Pittsburgh	47.50	47.50	47.50	85.00
O.-h. billets, Pittsburgh	47.50	47.50	47.50	85.00
O.-h. sheet bars, Pittsburgh	51.00	51.00	51.00	85.00
Forging billets, base, P'gh.	60.00	60.00	60.00	125.00
O.-h. billets, Philadelphia	51.30	51.30	51.30	100.00
Wire rods, Pittsburgh	57.00	57.00	57.00	90.00
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	3.73	3.73	3.73	5.159
Iron bars, Pittsburgh	3.50	3.50	3.50	4.75
Iron bars, Chicago	3.50	3.50	3.50	4.50
Steel bars, Pittsburgh	2.90	2.90	2.90	4.50
Steel bars, New York	3.145	3.145	3.145	4.669
Tank plates, Pittsburgh	3.25	3.25	3.25	9.00
Tank plates, New York	3.495	3.495	3.495	10.169
Beams, etc., Pittsburgh	3.00	3.00	3.00	4.50
Beams, etc., New York	3.245	3.245	3.245	4.669
Skelp, grooved steel, P'gh.	2.90	2.90	2.90	4.00
Skelp, sheared steel, P'gh.	3.25	3.25	3.25	6.00
Steel hoops, Pittsburgh	3.50	3.50	3.50	5.75

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

	Aug. 13, 1918	Aug. 6, 1918	July 16, 1918	Aug. 15, 1917
Sheets, Nails and Wire,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	5.00	5.00	5.00	8.50
Sheets, galv., No. 28, P'gh.	6.25	6.25	6.25	10.00
Wire nails, Pittsburgh	3.50	3.50	3.50	4.00
Cut nails, Pittsburgh	4.00	4.00	4.00	4.65
Fence wire, base, P'gh.	3.25	3.25	3.25	3.95
Barb wire, galv., P'gh.	4.35	4.35	4.35	4.85
Old Material, Per Gross Ton:				
Carwheels, Chicago	$29.00	$29.00	$29.00	$36.50
Carwheels, Philadelphia	29.00	29.00	29.00	35.00
Heavy steel scrap, P'gh.	29.00	29.00	29.00	31.00
Heavy steel scrap, Phila.	29.00	29.00	29.00	31.00
Heavy steel scrap, Chicago	29.00	29.00	29.00	29.00
No. 1 cast, Pittsburgh	29.00	29.00	29.00	30.00
No. 1 cast, Philadelphia	29.00	29.00	29.00	33.00
No. 1 cast, Chi'go (net ton)	29.00	28.25	28.00	23.00
No. 1 RR. wrot, Phila.	34.00	34.00	34.00	45.00
No. 1 RR. wrot, Ch'go (net)	29.75	29.75	29.75	33.50
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$6.00	$6.00	$6.00	$16.60
Furnace coke, future	6.00	6.00	6.00	10.00
Foundry coke, prompt	7.00	7.00	7.00	14.00
Foundry coke, future	7.00	7.00	7.00	10.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	26.00	26.00	26.00	28.00
Electrolytic copper, N. Y.	26.00	26.00	26.00	28.00
Spelter, St. Louis	**8.50**	8.10	8.50	8.50
Spelter, New York	**8.80**	8.40	8.75	8.75
Lead, St. Louis	7.75	7.75	7.75	10.75
Lead, New York	8.05	8.05	8.05	10.87½
Tin, New York	94.00	94.00	94.00	62.25
Antimony (Asiatic), N. Y.	13.00	13.00	13.00	15.00
Tin plate, 100-lb. box, P'gh	$7.75	$7.75	$7.75	$12.00

The advance of 10 per cent in blast furnace and steel works day labor announced by the Steel Corporation recently, and effective from Aug. 1, has also been made by other steel companies in this district, but by some of them under protest. This advance in wages will be another argument by the pig iron producers to be presented to the War Industries Board for higher pig iron prices for the last quarter. Some steel companies did not put the advance in effect until Aug. 15. Blast furnace and steel works common labor receives now about $4 to $4.20 per day of 10 hr., by far the highest wage ever paid for common labor in blast furnace or steel works practice. Not much complaint is heard about scarcity of common labor, but skilled labor is making so much money that in many plants the men are indifferent about working full time, and it requires the utmost diplomacy on the part of employers to keep them at work full time.

Under the workings of circular No. 4 and supplement No. 1 made a part thereof, also memorandum No. 2 dated July 3, the situation as regards selling and deliveries of steel products has been greatly simplified, and the steel people here who at first were opposed to the terms in this circular are now much pleased with the way it is working out. All orders for steel products of any kind, except Government orders, that are not accompanied by a priority certificate, which gives the order its rating, in order to secure a rating must have either an endorsement of a Government official or else be accompanied by an affidavit which will give such orders an automatic rating. In the case of jobbers, the automatic rating is provided as B4 when they sign the pledge provided under the circular dated July 3. All orders not provided for as above are classed as D, which means that they have virtually no standing.

The demand for steel for commercial purposes is not very active, but for war essentials is getting heavier right along. Under the rulings of the War Industries Board, jobbers are required to make up the average amount of steel products of any kind received during the first six months of this year per month, and they are allowed to receive only this quantity of goods during August. Stocks of jobbers in the first half of the year were very light, and receipts of steel were light, so that for the remainder of this year the average receipts of steel products will also be very light. The jobbers' market has certainly narrowed and will be still further limited as time goes on. There has also been sharp cutting off of steel supplies to companies not making strictly war essentials.

Billets and Sheet Bars.—All the large steel producers are short of steel, and would be very glad to buy in the open market, but no steel is available. There is a good deal of switching of steel from one plant to another, and for several months a large open-hearth steel plant in this district has been furnishing thousands of tons of ingots to another large producer whose rolling capacity is in excess of its melting capacity. Owing to the acute shortage in supply of sheet bars, sheet mills at present are not operating on an average of more than 60 per cent of capacity. If the Government demands for steel continue to increase, and they probably will, it is likely the rolling of sheet bars will be further restricted. Tin plate mills that get their bars in the open market are having very little trouble in getting almost a full supply of steel, the 95 per cent rate of operation among the mills attesting to this. Shell discard steel is being used to some extent in wire and wire-nail mills, and for other purposes where heretofore only open-hearth steel was used.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at $47.50, sheet bars $51, forging ingots $73, and forging billets $60 base, all f.o.b. at mill, Pittsburgh or Youngstown.

Pig Iron.—It is estimated that more than 100,000 tons of foundry iron recently was bought for first half delivery at the price of $33, Valley furnace, for No. 2, the contracts containing a clause that the price of the iron at the time of shipment shall be the maximum Government price in effect, but if there is no Government price in effect when shipments are made, then the price will be $33 at Valley furnace. There is a good deal of

inquiry for Bessemer and basic iron and some for foundry. The Page Steel & Wire Co. is inquiring for 18,000 tons of Bessemer iron and another steel company for 3000 tons of Bessemer for first half of next year delivery, while the Westinghouse company is inquiring for large quantities of foundry iron for Cleveland, Trafford City and Essington. However, none of the furnaces seems to have any iron to sell for next year, and several merchant furnaces say their obligations each month for pig iron over the remainder of this year are heavier than their output will be, and they will enter the new year considerably behind in shipments. None of the large producers of pig iron is quoting on inquiries now in the market, all saying they have no iron to sell. Output of pig iron in August will show a falling off as compared with July owing largely to the hot weather. There is more moisture in the air, and this being charged into the furnace has the effect of reducing output. All the blast furnaces in the Pittsburgh district are active, with the exception of two Edgar Thomson stacks at Bessemer which are being rebuilt. We quote:

Basic pig iron, $32; Bessemer, $35.20; gray forge, $32; No. 2 foundry, $33; No. 3 foundry, $32.50, and malleable $33.50, all per gross ton at Valley furnace, the freight rate for delivery in the Cleveland and Pittsburgh districts being $1.40 per ton.

Ferroalloys.—The recent request of President James A. Farrell of the Steel Corporation, that consumers of ferromanganese and other alloys cover themselves as far as possible over first half of next year has resulted in considerable activity in ferromanganese and also in ferrosilicon. One large Youngstown steel interest has bought 1000 tons or more of ferromanganese for first half, while a local steel company has bought 6000 to 8000 tons of domestic for the same delivery, all at $250, delivered, for 70 per cent. We also note a sale of 300 tons of domestic for first half at the same price, and other smaller sales that will amount to 1000 tons or more. Sales of ferrosilicon and also of spiegeleisen have been fairly active. With the increase in output of domestic ferromanganese, and also to some extent in ferrosilicon, the belief is stronger that the supply for first half of next year will be ample to meet all needs. Consumers of lower grades of Bessemer ferrosilicon and also of silvery iron are also covering for first half.

We quote 70 per cent ferromanganese at $250 delivered, 16 per cent spiegeleisen at $75 at furnace and 50 per cent ferrosilicon for prompt shipment at $160 and for delivery over the last half of the year, $150 to $155 at furnace, the furnaces usually absorbing the freight.

We quote 9 per cent Bessemer ferrosilicon at $54; 10 per cent, $55; 11 per cent, $58.30; 12 per cent, $61.60. We quote 6 per cent silvery iron, $41; 7 per cent, $43; 8 per cent, $45.50; 9 per cent, $47.50; 10 per cent, $50. Three dollars per gross ton advance for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, these furnaces having a uniform freight rate of $2 per gross ton, for delivery in the Pittsburgh district.

Structural Material.—Practically all the new work being placed is for the Government. The McClintic-Marshall Co. is now turning out 15,000 tons of fabricated steel for the new plant of the New York Shipbuilding Co., and has taken 1200 tons for a roundhouse for the Pennsylvania Lines West at Scully Station, Pa., and also 1000 tons for extensions to buildings for the Standard Steel Car Co., New Castle, Pa. This company is pushing work actively on its two new plants at Leetsdale and Pottstown, Pa., for fabricating ship plates, and hopes to have them in operation by Jan. 1, but this is doubtful. Estimates now are that 60,000 tons of fabricated steel will be needed for the Neville Island plant and the quantity may reach 100,000 tons. All this steel will be fabricated at the Ambridge, Pa., plant of the American Bridge, Co., which has also taken 1200 tons for a roundhouse for the Pennsylvania Lines West, at Stark, near Canton, Ohio. These two companies are filled with Government work for six to nine months. We quote beams and channels up to 15 in. at 3c. at mill, Pittsburgh for third quarter delivery.

Plates.—Heavy orders for plates have been placed lately by the Standard Steel Car Co., and the Pressed Steel Car Co. for the 3100 cars which they will build for France. The plate mills seem to be furnishing plates to the shipyards and the steel car plants almost as fast as needed. It is said that at some of the shipyards there is a heavy accumulation of plates, and in several cases mills have been asked to ease down in shipments. The output of plates in August will not be as heavy as in July on account of the excessively hot weather. We quote ¼ in. and heavier sheared plates at 3.25c. at mill, Pittsburgh, for third quarter delivery.

Iron and Steel Bars.—Owing to the great shortage in supply of Bessemer and open-hearth steel, the output of steel bars is not over 60 per cent of normal. The distribution of the product of steel bars has been simplified a good deal by the rulings set forth in circular No. 4, and it is estimated that 90 per cent or more of the total output is being shipped on direct Government orders, and on contracts to implement makers and other users that are turning out strictly war essentials. There is some shortage of business among the bar iron mills and iron bars can be obtained for fairly prompt delivery. We quote soft steel bars rolled from billets at 2.90c.; from old steel rails, 3c., and refined iron bars, 3.50c. at mill, Pittsburgh, for third quarter delivery.

Tin Plate.—July was a record breaker in output of tin plate, a recent official estimate putting the output last month at 3,110,000 base boxes. The weather was favorable nearly all of July, but owing to the hot weather so far this month, the output in August will no doubt show a falling off. The tin plate trade was not affected to any great extent by the rulings of circular No. 4, as practically the entire output of tin plate for some months has been distributed to consumers under Government direction, manufacturers of food containers having had the preference in deliveries of tin plate for a long time. Reports that a recent order had been issued stopping the manufacture of terne plate are incorrect. The American Sheet & Tin Plate Co. is still making a fairly large quantity of terne plate and so are other mills. In fact, the Government has been buying good sized quantities of terne plate ever since the war started. The Trumbull Steel Co. at Warren, Ohio, recently changed over four more sheet mills to tin mills, and is now operating 23 tin mills, 9 sheet mills and 2 jobbing mills. Under the rulings of circular No. 4, where sales of stock items of tin plate exceed 5 tons to any one customer, a priority certificate or a pledge must be furnished before the tin plate can be shipped. There is very little selling of tin plate, the product of the mills being under contract for the remainder of this year, and some mills will carry over a large tonnage into next year. We quote tin plate for third quarter at $7.75 per base box, f.o.b. Pittsburgh, made from Bessemer or open-hearth stock, but it is said 75 per cent or more of the present output of tin plate is being made from Bessemer steel. Prices on terne plate for third quarter are given on page 419.

Sheets.—Exact figures showing output of sheets by all the mills in July are not yet available, but the rate of operation among the mills last month was only about 60 per cent. The shortage in supply of sheet bars is steadily getting worse, and before long sheet mill operation will be on a 50 per cent basis. With the present greatly limited output sheet mills are well sold up for remainder of this year on Government direct and indirect orders and also on commercial business. It is said that recently there has been a more equitable distribution of sheet bars, some of the smaller mills getting more bars than they had been receiving prior to the time the Director of Steel Supply requested that sheet mill output be limited to 75 per cent. Prices on sheets are given in detail on page 419.

Wire Rods.—Owing to shortage in steel, output of rods is not more than 50 per cent of normal. The Jones & Laughlin Steel Co., which has two rod mills at its Aliquippa works, has operated only one of them for some months. Inquiry for rods is very active, but most mills are refusing to quote, saying they have no rods to spare. There have been some fair-sized sales recently of high carbon rods at $80 to $90 at mill. Prices on rods for third quarter are given on page 419.

Wire Products.—Local mills report they are working largely on Government contracts for wire nails and

wire placed some time ago and also have heavy contracts for barbed wire for the British and Italian governments. Owing to the shortage in steel, operations among the wire mills are on about a 60 per cent basis, but one large company is operating its wire and wire nail mills at about 45 per cent of its normal capacity. It is said there are no wire nails, barbed or plain wire for the commercial trade, the Government direct and indirect orders taking about all of the present limited output. Jobbers' stocks are very much depleted, and under recent rulings of the War Industries Board they are allowed to replenish stocks only to the extent of shipments made in the previous month to companies making war essentials. Local jobbers report their stocks very low, and on the more common sizes they are almost depleted. The commercial demand for nails and wire is very heavy, but the mills are turning down nearly all inquiries, saying they do not have the nails or wire to spare. Prices on wire products for third quarter are given on page 419.

Cotton Ties.—The season is pretty well over and the output of cotton ties this year is expected to be fully as large as last year, in spite of the shortage in supply of steel. Cotton ties for August delivery are $1.94 per bundle of 45 lb., f.o.b. Pittsburgh.

Shafting.—Makers continue to report that fully 90 per cent of the present limited output of shafting is being shipped out on Government direct and indirect orders. Shipments to builders of pleasure automobiles have been shut off. On the larger sizes ranging from 1½ to 5-in. the demand is heavy, and makers are sold up for three or four months, but for the smaller sizes 1½ in. and less the demand is light. We quote cold rolled shafting at 17 per cent off list, in carloads and 12 per cent in less than carloads f.o.b. Pittsburgh for third quarter.

Nuts and Bolts.—Makers continue to report heavy demand for nuts and bolts for quick delivery especially from shipyards and other plants working on strictly war essentials. Very large shipments of nuts and bolts are still being made by express instead of freight in order to expedite delivery. Only a very small part of the output is available for jobbers and their orders for nuts and bolts are filled only when they furnish an affidavit that their pledge is on file at Washington. Discounts for nuts and bolts for third quarter are given on page 419.

Rivets.—Close to 100 per cent of the present limited output of rivets is being shipped on Government direct and indirect orders. The new demand from the commercial trade is quiet. We quote cone-head structural rivets at $4.40; cone-head boiler rivets at $4.50 per 100 lb. and small rivets 50 and 10 per cent off list, f.o.b. Pittsburgh, for third quarter delivery.

Hoops and Bands.—Owing to shortage in steel, output of hoops and bands is only about 60 per cent of normal, and practically this entire output is being taken by the Government on direct and indirect orders. The demand for hoops for cooperage purposes is reported especially heavy. We quote steel hoops and steel bands at 3.50 per lb. f.o.b. Pittsburgh for third quarter delivery. Extra and differentials in effect were given in full on pages 1357 and 1374 of THE IRON AGE of May 23.

Spikes.—It is estimated that about 30,000 kegs of standard spikes will be needed for the 10,000 cars placed recently by the Government for delivery in France, and makers of spikes are expecting the Government to send out inquiries for these in a short time. We quote:

Standard sizes of railroad spikes 9/16 x 4½ in. and larger, $3.90 per 100 lb. in lots of 200 kegs of 200 lb. each, or in larger lots. Boat spikes, $5.25 per 100 lb., track bolts, $4.90 base in lots of 200 kegs or more; less than 200 keg lots, $1 per 100 lb. extra. All f.o.b. Pittsburgh.

Hot-Rolled Strip Steel.—The demand is only fairly heavy, due to the fact that mills making hot-rolled strip steel are not running more than 60 per cent of capacity. Makers of hot-rolled strip steel are in position to furnish this material for commercial work in from 30 to 60 days from date of order. We quote hot-rolled strip steel at $3.50 per 100 lb. f.o.b. Pittsburgh, with 50c. additional per 100 lb. for special stamping quality.

Cold-Rolled Strip Steel.—Present output is not more than 60 to 70 per cent of normal, and the greater part of this is going to the Government in direct and indirect orders. Orders from jobbers are being accepted when priority certificates are furnished or an affidavit that the pledge has been signed and sent to Washington. Shipments to jobbers are limited each month to the average quantity received during the previous six months. We quote:

We quote cold-rolled strip steel at $6.50 per 100 lb., f.o.b. Pittsburgh, terms 30 days, less 2 per cent for cash in 10 days when sold in quantities of 300 lb. or more. Freight is allowed to destination when it does not exceed 31c. per 100 lb.

Skelp.—The present limited output of skelp is under contract for the remainder of this year, and none is available in the open market. We quote:

We quote grooved skelp at $2.90; universal skelp, $3.15, and sheared skelp, $3.25 base. Special skelp for boiler tubes, etc., is $3.40 for base sizes and $3.55 for other sizes, all prices being per 100 lb. f.o.b. Pittsburgh.

Wrought Pipe.—Under the recent ruling of the War Industries Board, mills are allowed to ship to jobbers during this or any succeeding month one-sixth of the quantity of pipe shipped to them during the first six months of this year. This will allow some jobbers to increase their stocks. Their shipments in June and July from the mills were very light. The large mills rolling iron and steel pipe have practically nothing to sell for the remainder of this year, and the National Tube Co., and other large mills have large Government orders that will carry over into next year. Output of iron and steel pipe in July was heavy, but for August will show some falling off. Discounts on iron and steel pipe for third quarter are given on page 419.

Boiler Tubes.—Makers of iron and steel tubes and also seamless steel tubing are filled up for many months, mostly on Government work. It is said that no tubes of any kind are available in the open-market for commercial purposes. Discounts on iron and steel tubes are given on page 419.

Coke.—Blast furnace operators continue to report a plentiful supply of coke. The starting up of the Koppers by-product ovens at Clairton has released a large quantity of beehive coke for other furnaces of the Carnegie Steel Co. We quote 48-hr. blast furnace coke at $6, 72-hr. foundry coke at $7, and crushed coke from 1-in. size at $7.35, all in net tons at oven.

Old Material.—Dealers continue to report a heavy shortage in the supply of scrap of all kinds. There is a good deal of complaint as to the quality of scrap, particularly for open-hearth purposes. The Pennsylvania and Baltimore & Ohio lists recently sent out closed at an early date. We note sales of 5000 to 6000 tons of heavy steel scrap at $29, 2000 tons of low phosphorus scrap at $39, and 800 tons of borings and turnings at $19, per gross ton delivered to consumer's mills, these sales carrying the usual 3½ per cent commission. We quote prices on iron and steel scrap in effect for third quarter, on which 3½ per cent commission is allowed on the delivered price, for delivery in Pittsburgh and all consuming points that take Pittsburgh freights as follows:

Heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered	$29.00
No. 1 cast scrap (for steel plants)	29.00
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., Franklin, Pa., and Pittsburgh	34.00
Hydraulic compressed steel scrap	29.00
Bundled sheet scrap, sides and ends, f.o.b. consumer's mills, Pittsburgh district	$27.50 to 29.00
Bundled sheet stamping scrap	22.00 to 23.00
No. 1 busheling scrap	28.00 to 29.00
Railroad grate bars	18.00 to 19.00
Low phosphorus melting stock (unguaranteed)	34.00
Low phosphorus melting stock (guaranteed)	36.50
Low phosphorus melting stock (bloom and billet ends heavy plates)	29.00
Iron car axles	46.00 to 46.50
Locomotive axles, steel	46.00 to 46.50
Steel car axles	46.00 to 46.50
No. 1 busheling scrap	28.00 to 29.00
Machine shop turnings	19.00
Cast iron wheels	29.00
Rolled steel wheels	36.00
Sheet bar crop ends (at origin)	35.00
Cast iron borings	19.00
No. 1 railroad wrought scrap	34.00
Heavy steel axle turnings	24.00
Heavy breakable cast scrap	28.00 to 29.00

Chicago

CHICAGO, Aug. 12—(*By Wire*).

Mill operation has assumed a well-balanced condition, ingot production being nearer the requirements of the finishing end. In some cases an excess of pig iron is being produced beyond what ingot producing capacity can handle. This is fortunate in view of scrap shortage, which requires a larger proportion of iron to replace scrap. Concessions to agricultural implement interests of $5 per ton seem not to have been settled yet. Steel makers are opposed to it on the ground it will cause other steel users to ask the same price. No good reason is available for the reduction from the mill man's point of view. It is understood the new price, if allowed, will be applied to all last half shipments of steel as these all go into 1919 implements.

Export demand for bar iron is giving that market some support, the Orient asking lots up to 1000 tons, principally of rounds. Orders are being booked subject to possible cancellation if the Government objects to their shipment.

Scrap supplies continue short, with cessation of shipments East. Pig iron sellers have not resumed sales for 1919 delivery, awaiting better clarification of the situation by the Government. Material for small cars for use in France have not been allocated, but mills are making allocation certificates before booking tonnages.

Pig Iron.—Awaiting more definite action on the part of the Government, pig iron makers are not booking business for 1919 delivery, except in cases of regular customers who have work which is undoubtedly essential, with contracts extending to the middle of next year. Other buyers are being forced to await clearer announcement by the Government. Distribution of the current output is the great problem to meet at present, and this requires much vigilance and care to meet war needs. An excess of basic iron from a steel making furnace here has caused the allocation of a tonnage to be supplied to an Iowa manufacturer over the next five months. This will ease the situation somewhat on merchant furnaces. A new stack at Indiana Harbor will go into blast in September, releasing merchant iron at present going to steelmaking purposes. This excess tonnage has been discounted and contracted already. The leading interest has all its stacks in blast except one, which is being relined, and one merchant stack which has been idle since last winter. Every condition favors pig iron distribution becoming a local matter and most users seek to obtain it as near home as possible to avoid freight charges. Some tonnages for quick delivery continue to be placed by the Government, taking precedence over other contracts.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable, steel-making irons, which are f.o.b. furnace, and do not include a switching charge averaging 50c per ton:

Lake Superior charcoal, Nos. 2 to 5	$38.00
Lake Superior charcoal, No. 6 and Scotch	$39.50 to 41.00
Northern coke foundry, No. 1	33.50
Northern coke foundry, No. 2	33.00
Northern coke foundry, No. 3	32.50
Northern high-phosphorus foundry	33.00
Southern coke No. 1 foundry and No. 1 soft	39.50
Southern coke, No. 2 foundry	38.00
Malleable	33.50
Basic	32.00
Low phosphorus (copper free)	53.00
Silvery, 7 per cent	46.20

Ferroalloys.—Ferromanganese from the local producer is practically sold for 1918 delivery, though some small business can be accommodated. Some inquiry is present, though it is light. Foundries continue in the market for ferrosilicon to supply the lack of that element in irons as now made. Additional producing capacity in this alloy is coming in and aiding the situation materially. Spiegeleisen is in demand, and in sufficient volume for needs. We quote 70 per cent ferromanganese at $250 delivered; 50 per cent ferrosilicon at $150 to $160 delivered; 16 to 18 per cent spiegeleisen at $75 furnace.

Plates.—Rolling of plates for shipment to Japan has been practically completed. Orders for about 50,000 tons of ship plates for two Pacific Coast yards have just been placed with the leading interest. Delivery of material for car building is progressing, plates for this purpose not requiring as close inspection as for ships.

The official mill quotation is 3.25c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers who have stock quote 4.52c.

Bars.—The reported agreement upon a concession of $5 a ton on bars for agricultural implement makers seems not to have been made, but is expected to be announced shortly. Steel makers generally do not like the move, as they believe it would tend to unsettle prices. As an argument for the reduction, it is pointed out that the largest maker of implements has its own steel and can keep down the price of machinery. Rail carbon bars are being booked only in proportion to rails available, which is a small tonnage. One mill is entirely on shell discards and will not resume on rails until fall when a supply has been accumulated. Orders for bar iron for export to the Orient in lots up to 1000 tons are being booked. Demand for chain iron is increasing.

We quote, mill prices, mild steel bars at 2.90c., Pittsburgh, taking a freight rate to Chicago of 27c. per 100 lb. Bar iron is quoted at 3.50c., Chicago, and rail carbon at 3c., Chicago, a leading maker, having adhered to Chicago as the basing point. Jobbers' prices follow:

Soft steel bars, 4.17c.; bar iron, 4.17c.; reinforcing bars, 4.17c., base. No extra charge for twisting ¾-in. and over; 2½c. for twisting ⅝, 11/16, ½ and 9/16; 5c. for 7/16 and ⅜; 10c. for 5/16 and 15c. per ¼-in. Extras as per card are charged for small sizes. Shafting, list plus 13 per cent.

Structural Material.—The American Bridge Co. has taken 391 tons for an open hearth building for the Pacific Coast Steel Co., Portland, Ore. A. Bolters' Sons, Chicago, has taken 149 tons for an addition to a foundry building for the Whiting Foundry Equipment Co., Harvey, Ill. The General Motors Co. is asking bids on 1400 tons for a foundry building at Saginaw, Mich. The American Car & Foundry Co. asks 450 tons for a craneway at St. Louis.

The official mill quotation is 3c., Pittsburgh, which takes a freight rate of 27c per 100 lb. for Chicago delivery. Jobbers quote 4.27c. for material out of warehouse.

Wire Products.—Government requirements cover practically the entire output of wire mills, and the situation is quiet as to other demand. For prices see finished iron and steel f.o.b. Pittsburgh, page 419.

Sheets.—Heat and small supply of steel reduce operations to about two-thirds capacity. Demand is light except for heavy gages for Government needs. For prices and freight rates see finished iron and steel f.o.b. Pittsburgh, page 419.

Chicago delivery out of stock, regardless of quantity, No. 10 blue annealed, 5.52c.; No. 28 black, 6.52c., and No. 28 galvanized, 7.77c.

Bolts and Nuts.—Shortage of stock for cold-pressed nuts is marked but has not inconvenienced operation, though a matter of concern. Mills continue to book orders. Heavy Government requirements pending for weeks are not yet placed. For prices and freight rates see finished iron and steel f.o.b. Pittsburgh, page 419.

Structural rivets, 5.67c.; boiler rivets, 5.77c.; machine bolts up to ⅞ x 4 in., 37½ per cent off; larger sizes 25 and 5 off; carriage bolts up to ¾ x 6 in., 32½ off; larger sizes, 20 off; box pressed nuts, square, tapped, $1.05 off; hexagon tapped, 85c. per 100 lb.; coach or lag screws, gimlet points, square heads, 40 per cent off.

Cast Iron Pipe.—Crosby, Minn., opened bids Aug 13 for 350 tons. Routine orders are in fair volume, with special castings for war work making a large total.

We quote per net ton f.o.b. Chicago ex-war tax as follows: Water pipe 4-in., $64.80; 6-in. and larger, $61.80. Class A and gas pipe $1 extra.

Rails and Track Supplies.—A Western mill has been given a large part of leading interest's half of 200,000 tons of rails for military railroads in France, to be furnished in four months, taking precedence over all others.

Standard railroad spikes, 4.11½c., Chicago. Track bolts, with square nuts, 5.11½c., Chicago. Tie plates, steel, 3.25c.; tie plates, iron, 3.75c.; f.o.b. maker's mill. The base for light rails is 3c., f.o.b. maker's mill for 25 to 45-lb. sections, lighter sections taking Government extras.

Old Materials.—Lack of heavy steel for mills here has limited possible shipments to the East on permits given some time ago. Most consumers are seeking additional supplies, which are difficult to obtain. Cast scrap is in larger demand by foundries as pig iron be-

comes scarcer. Scrap lists have been issued by the Union Pacific and Michigan Central.

We quote for delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Old iron rails	$39.00
Relaying rails	$55.00 to 60.00
Old carwheels	29.00
Old steel rails, rerolling	34.00
Old steel rails, less than 5 ft	34.00
Heavy melting steel	29.00
Frogs, switches and guards, cut apart	29.00
Shoveling steel	29.00
Steel axle turnings	24.00
Per Net Ton	
Iron angles and splice bars	$34.82
Iron arch bars and transoms	41.50
Steel angle bars	30.36
Iron car axles	41.52
Steel car axles	41.52
No. 1 railroad wrought	$29.75 to 30.36
No. 2 railroad wrought	28.25 to 28.75
Cut forge	28.25 to 28.75
Pipes and flues	24.50 to 25.00
No. 1 busheling	27.00 to 27.50
No. 2 busheling	18.50 to 19.00
Steel knuckles and couplers	30.36
Coil springs	30.36
No. 1 cast scrap	29.00 to 29.50
Boiler punchings	32.00 to 33.00
Locomotive tires, smooth	40.50 to 41.52
Machine-shop turnings	15.75 to 16.25
Cast borings	16.50 to 16.96
Stove plate and light cast scrap	24.50
Grate bars	24.50
Brake shoes	24.75 to 25.25
Railroad malleable	30.36
Agricultural malleable	29.00 to 30.00
Country mixed scrap	21.00 to 21.50

Cleveland

CLEVELAND, Aug. 13.

Iron Ore.—Quicker shipment of Lake Superior iron ore to lower lake docks is becoming manifest and authorities confidently expect a record for the present month. Better dispatch at lower lake ports is the rule because of a far more satisfactory movement of coal to docks from mines, this due to a recent order of the National Fuel Administration, which has directed it specifically. Works located in several districts have been cut off from some of their coal supplies temporarily, while the lake coal movement is being accelerated and some of them will be forced to use up the coal they had stockpiled in their own yards. But with the improved dispatch of coal northward comes also a return dispatch of ore which has led to expectations of a fine August record. Too, the coal movement to Canada is being helped through the employment of the smaller ocean-going vessels now being launched for the Emergency Fleet Corporation at the rate of one every two working days in lake shipyards. These formerly were loaded with wheat, etc., for overseas trade, but now they take aboard coal for Montreal and other Canadian ports. From these latter ports they sail for coast ports and there enter, it is understood, the coastwise trade.

We quote f.o.b. lower Lake docks, as follows: Old range Bessemer, $6.40; old range non-Bessemer, $5.65; Mesaba Bessemer, $6.15; Mesaba non-Bessemer, $5.50.

Pig Iron.—A flood of inquiries for all grades of iron, but largely for small lots ranging from 500 to 1000 tons, keeps coming to producers. A large number of these inquiries are for delivery in the first half of next year, and considerable selling has been done by Cleveland sales agencies and producers on this basis. Allocations by the pig iron committee also have been extremely heavy the past week, totalling 166,000 tons. This aggregate of allocations includes all grades of iron. Of this total 99,000 tons is basic iron, and of this 99,000 tons 85,000 tons went to Northern and Southern makers for shipment to England and 14,000 tons went to a central Ohio steel interest. A total of 23,000 tons of Bessemer iron has been allocated, of which 15,000 tons is for shipment to France. Other allocations of the week include 17,000 tons of low phosphorus, 9,000 tons of malleable and 25,000 tons of No. 2 foundry, mostly in scattered lots. The total allocations of pig iron made by the committee since May 1 last now reach 713,000 tons. It is understood the War Industries Board is planning to change the system of weekly reports from blast furnace owners to a monthly basis and at the same time amplify the form of the report to include data which can be employed also to advantage by the War Industries Board as well as the pig iron committee. This report may be ready for publication on Sept. 1. A number of Northern charcoal pig iron producers met here last week with representatives of the War Industries Board and took steps to formally organize a committee of charcoal iron producers to aid the Government. It is understood further details are being arranged and will be announced later, but the general scope of the plan is to put matters of allocation largely up to the producers themselves. The Cleveland Furnace Co. will relight its stack this week, which has been in course of repair.

Bessemer	$36.60
Basic	33.40
Northern No. 2 foundry	33.40
Southern No. 2 foundry	38.00
Gray forge	32.40
Ohio silvery, 8 per cent silicon	47.90
Standard low phosphorus, Valley furnace	53.00

Nuts, Bolts and Rivets.—As suggested last week, the placing specially of bolts in class C by the priorities committee has served to raise several questions regarding deliveries, especially to shipyards, and makers are seeking further light on the subject. The present ruling is not regarded as entirely satisfactory or clear.

Old Material.—The volume of trading in the Cleveland district has been cut in half by the advent of extremely hot weather as well as by the vacation season. Heavy melting steel is in fair demand at the Government maximum, and the same is true of low phosphorous scrap. While considerable scrap is finding its way into yards in this district, yet it is largely mixed. Dealers appear still able to sell scrap more easily than to buy it. We quote delivered consumers' yards in Cleveland and vicinity as follows:

Per Gross Ton	
Steel rails	$28.00 to $29.00
Steel rails, under 3 ft	34.00
Steel rails, rerolling	34.00
Iron rails	39.00
Iron car axles	46.50
Steel car axles	46.50
Heavy melting steel	29.00
Cast borings	18.50 to 19.00
Iron and steel turnings and drillings	18.25 to 18.75
Hydraulic compressed sheet scrap	28.00 to 29.00
No. 1 railroad wrought	34.00
Cast-iron car wheels, unbroken	29.00
Cast-iron car wheels, broken	34.00
Agricultural malleable	29.00 to 30.00
Railroad malleable	34.00
Steel axle turnings	24.00
Light bundled sheet scrap	24.50 to 25.00
Cast-iron scrap	29.00
Cast-iron scrap, broken to cupola size	32.00 to 33.00
No. 1 busheling	29.00 to 30.00
Per Net Ton	
Railroad grate bars	$23.00 to $24.00
Stove plate	22.50 to 23.00

Finished Iron and Steel.—Cleveland steel makers and sellers are disposed to look askance at the proposal to allow a concession of $5 a ton on steel as of July 1 to agricultural implement makers. That such a proposal is actually under consideration is confirmed from undoubted sources, but if the concession has been granted it has not been announced. A declaration from official Washington to the effect that wire nails are plentiful is not accepted in this district as accurate, the exactly opposite view being taken here. It is pointed out that the Government direction of certain tonnages of open-hearth steel in this district from wire mills to plate concerns has shortened the supply of steel available for nails, and the diversion of other tonnages of Bessemer steel, also from the wire mills as directed officially, will tend to shorten even the present supply available for nail making. Semi-finished steel still is difficult to secure for rolling into sheets, and the Valley production of sheets has been reduced in some instances to 50 per cent. While some iron and steel bars have been sold here for export, some of it to Japan, it is still lying on the yards of mills since. While export licenses are comparatively easy to get, export shipment licenses, which also must be secured, are harder to obtain. Local ship-

yards do not appear to be having any difficulty getting plates and shapes for their work.

Steel bars, 4.07c.; plates, 4.42c.; structural material, 4.17c.; No. 10 blue annealed sheets, 5.42c.; No. 28 black sheets, 6.42c.; No. 28 galvanized sheets, 7.67c.

St. Louis

ST. LOUIS, Aug. 12.

Pig Iron.—Allocations to preferred industries by the Government authorities are bringing to the furnace representatives in this district business with consumers never on their books before, this situation being due to the distribution of metal as available to those needing it most, regardless of former methods or channels of distribution. By the same token, some old customers are being cut down on their allotments under existing contracts because their plants are not working on vitally essential production. However, as the regional survey progresses, this is being changed and Government business is being turned to plants heretofore engaged on domestic work, so that the flow of pig iron into this territory is steadily increasing. The needs for material are great and the larger industries are in a condition where they need all material they can get. In consequence, buying would be particularly heavy if there were any pig iron available. As it is, off analysis iron, which under other circumstances would have to be remelted by the furnaces, is being snapped up wherever offered. But only small lots and few of them are available even under these conditions.

Old Material.—In the scrap market an intense need for material is developing, as the consumers are finding their yards down to the bottom with the supplies available growing smaller and no encouragement as to their increase. Dealers are not particularly busy, as they have little material that they can offer, and the railroad and other lists that are coming out are few and light, due to the reclamation of material, the shortage of labor to pick up scrap, the lack of cars and other causes. Cast iron and stove plate are particularly strong, and are quotable higher as a result of increased demand, due to a desire to substitute for other material as well as needs for regular uses. Lists out during the week included 1110 tons from the Wabash, 300 tons from the Mobile & Ohio and 600 tons from the Union Pacific, as well as a number of small odd lots from other sources, but not even large in the aggregate. We quote dealers' prices, f.o.b. customers' industrial works, St. Louis district, as follows:

Per Gross Ton	
Old iron rails	$37.00 to $37.50
Old steel rails, rerolling	33.50 to 34.00
Old steel rails, less than 3 ft	31.00 to 31.50
Relaying rails, standard sections, subject to inspection	55.00 to 65.00
Old carwheels	28.50 to 29.00
No. 1 railroad heavy melting steel scrap	28.50 to 29.00
Heavy shoveling steel	27.00 to 27.50
Ordinary shoveling steel	26.50 to 27.00
Frogs, switches and guards, cut apart	28.50 to 29.00
Ordinary bundled sheet scrap	23.00 to 23.50
Heavy axle and tire turnings	20.50 to 21.00
Per Net Ton	
Iron angle bars	$33.00 to $33.50
Steel angle bars	27.00 to 27.50
Iron car axles	40.00 to 40.50
Steel car axles	40.00 to 40.50
Wrought arch bars and transoms	40.00 to 40.50
No. 1 railroad wrought	28.50 to 29.00
No. 2 railroad wrought	27.50 to 28.00
Railroad springs	29.50 to 30.00
Steel couplers and knuckles	29.50 to 30.00
Locomotive tires, 42 in. and over smooth inside	37.00 to 37.50
No. 1 dealers' forge	26.00 to 26.50
Cast iron borings	16.25 to 16.75
No. 1 busheling	25.50 to 26.00
No. 1 boilers, cut to sheets and rings	22.50 to 23.00
No. 1 railroad cast scrap	28.00 to 28.50
Stove plate and light cast scrap	23.00 to 23.50
Railroad malleable	26.00 to 26.50
Agricultural malleable	25.00 to 25.50
Pipes and flues	23.00 to 23.50
Heavy railroad sheet and tank scrap	22.50 to 23.00
Railroad grate bars	20.00 to 20.50
Machine shop trimmings	16.00 to 16.50
Country mixed scrap	19.50 to 20.00
Uncut railroad mixed scrap	23.50 to 24.00

Coke.—The allotment of coke to old customers in this territory has about ceased, as the ovens and by-product plants have about cleared up their production, so far as they can gage it at this period, for the next 12 months. Consumption is kept at a point which makes it necessary to watch shipments closely and get them into plants in order to keep work moving steadily.

Finished Iron and Steel.—In finished products no new features have appeared. Mill deliveries are as scarce as hen's teeth, except to preferred industries, and the warehouses are still maintaining their close scrutiny of orders in protection against irregular uses of material against the Government program. For stock out of warehouse we quote as follows:

Soft steel bars, 4.24c.; iron bars, 4.24c.; structural material, 4.34c.; tank plates, 4.59c.; No. 8 sheets, 5.54c.; No. 10 blue annealed sheets, 5.59c.; No. 28 black sheets, cold rolled, one pass, 6.59c.; No. 28 galvanized sheets, black sheet gauge, 7.84c.

Buffalo

BUFFALO, Aug. 12.

Pig Iron.—Furnaces are not considering anything but Government and war industries' business at present, although inquiries keep coming in for various other purposes from all sections, including Southern and Central districts as well as from local territory. No contracting can be done, as books are filled covering the current year's output and Government needs will apparently absorb 1919 production for a considerable distance ahead. Good sized tonnages of foundry grades have been allocated to local furnaces the past week. As required by the War Industries Board, reports are now being made weekly by producers, specifying classification of tonnage on every order taken and every order on which shipment is made, to show whether Government, other domestic or foreign tonnage, and also classified as to the preference list for necessary war industries. We quote the fixed schedule of prices, f.o.b. furnace, Buffalo, as follows:

No. 1 foundry, 2.75 to 3.25 silicon	$34.50
No. 2 X, 2.25 to 2.75 silicon	33.50
No. 3 foundry, 1.75 to 2.25 silicon	32.50
Gray forge	32.00
Malleable	33.50
Basic	32.00
Lake Superior charcoal, regular grades, f.o.b. Buffalo	37.50

Old Material.—Demand continues to exceed supply, being very active for practically all grades. Inquiry for cast scrap is particularly strong. Large demand is noted from Pittsburgh and Youngstown consumers for machine shop turnings. These users claim permits will be available, as there is no market here at present for the ordinary shop turnings. Open hearth plants have made purchases of first-cut shell turnings here, and it is reported that in some instances shoveling machine shop turnings have been misapplied on these orders. Investigation is being made to ascertain if such shipments can be charged to anything other than "oversight," and if so, to have such practices rectified. Owing to the growing scarcity of heavy melting steel, dealers are disinclined to contract ahead for more than very brief periods. There is also some evidence of a growing scarcity of cars for loading. We quote current prices as follows per gross ton, f.o.b. Buffalo:

Heavy melting steel	$29.00
No. 1 low phosphorous, heavy, 0.04 and under	39.00
Low phosphorous, 0.04 and under	36.50
Low Phosphorous, not guaranteed	34.00
No. 1 railroad wrought	34.00
No. 1 railroad and machinery cast	34.00
Iron axles	$44.00 to 46.00
Steel axles	44.00 to 46.00
Carwheels	29.00
Railroad malleable	34.00
Machine shop turnings	17.00 to 17.50
Heavy axle turnings	24.00
Clean cast borings	18.00 to 19.00
Iron rails	36.00 to 37.00
Locomotive grate bars	27.50 to 28.00
Stove plate	27.50 to 28.00
Wrought pipe	27.00 to 28.00
No. 1 busheling scrap	29.00 to 30.00
No. 2 busheling scrap	21.00 to 23.00
Bundled sheet stamping scrap	21.00 to 23.00

Finished Iron and Steel.—Most sales agencies report business quiet, incident to the summer vacation period,

and nothing being taken on in the way of new business, except such as can be strictly construed as for Government requirements. They also report that much time is being devoted at present to getting old orders properly adjusted so that compliance can be given to the new ruling of the War Industries Board establishing automatic priority classifications upon receipt of signed affidavits from purchasers. The John W. Cowper Co., Buffalo, has the contract for the erection of a plant addition for the J. H. Williams Co., Buffalo, calling for a considerable tonnage of reinforcing bars. Bids will soon be taken for about 100 tons of fabricated steel for a 2-story plant extension for the Niagara Electro Chemical Co., Niagara Falls, N. Y.

Birmingham

BIRMINGHAM, ALA., Aug. 12.

Pig Iron.—Government control of the pig iron market in the South is still complete. The production is not showing improvement that is desired. In July Alabama's production was 1425 tons less than in June. The production in July was 201,427 tons. While the basic iron being produced in this district on the British Government order is being turned out, there has been no movement of it. The three companies working on this contract are to supply about 30,000 tons during the present month. As soon as the ships are ready the shipments will be undertaken, but in the meantime the Railroad Administration is not taking any chances with tonnage that can wait a while. Inquiries for 1919 deliveries are still coming in, and while there have been admissions of a few sales, there is but little being done in this direction. The total tonnage so far disposed of for next year delivery is inconsequential. All inquirers for iron for that delivery announce without solicitation that it is intended using the iron for essential production. Manufacturers announce that the requirements of the Government will be strictly lived up to. Raw material for iron making has not been as free as it might of late, and labor has been a little uncertain also.

Pig iron prices, f.o.b. furnaces:

No. 2 foundry, and soft	$33.00
Basic	32.00

Cast-iron Pipe.—With but few orders in hand, mainly Government needs and some old contracts, the cast-iron pipe production is far below normal in this district. At several of the pipe plants conversion has taken place to take on Government contracts in other lines.

Coal and Coke.—Coal production in Alabama is showing some depression by reason of inability of railroads to furnish all the cars needed at the mines. Representative of the Fuel Administrator for this State gave out figures of production for week ended Aug. 3 at 417,462 tons, against 433,738 tons for the week ended July 27. The production the past week will also show a falling off. Coke production is about the same as it has been. The New Castle Coal Co. has completed the shipment of 1590 tons of coke to Valparaiso, and is shipping a little into Mexico for an American smelting interest.

Old Material.—Southern scrap iron and steel dealers are still complaining of the dull market. Local consumers are not willing to pay the Government maximum figures, and no scrap is being bought in save to fill old contracts. While reports continue coming in that scrap is scarce in Northern centers, no business has as yet been accepted here for shipment northward. Quotations are as follows:

Old steel axles	$35.00 to $36.00
Old steel rails	28.00 to 28.50
Heavy melting steel	25.00 to 26.00
No. 1 railroad wrought	30.00 to 32.00
No. 1 cast	27.50 to 28.50
Old carwheels	29.00 to 29.50
Tramcar wheels	26.00 to 26.50
Machine shop turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Stove plate	23.00 to 23.50

Philadelphia

PHILADELPHIA, Aug. 13.

Hot weather has caused a slump in iron and steel production during the past week or 10 days. In some cases, output has fallen off 25 per cent or more, this being particularly true of rolling mills. Blast furnaces have had difficulty in making standard iron.

Steel companies are acting upon the recent instructions of the War Industries Board in asking all of their customers for pledges that all of the steel furnished to them will be put to essential uses only and will not be hoarded. Officials of several of the leading producers express satisfaction with this new method of handling priorities, as it relieves the makers of much of the responsibility which they formerly shared with the consumer in determining whether the steel was to be used in essential work. Now the burden of proof is solely upon the consumer, and if pledges are broken or false statements made, the onus will fall upon the consumer and not upon the mill. If consumers are not satisfied with the priority ratings given them, they have the right to appeal to the Priorities Division of the War Industries Board to adjust the matter.

Evidence of the growing shortage of scrap is afforded by the action of the Committee on Steel and Steel Products, at the request of the Sub-Committee on Scrap Iron and Steel, in placing an embargo for 30 days on shipments of borings and turnings to blast furnaces, except makers of low phosphorus pig iron.

Pig Iron.—Orders for about 16,000 to 17,000 tons of foundry iron have been allocated to makers in the East and in Alabama at the request of the Bethlehem Steel Co., which recently ceased making foundry iron, putting its furnaces solely on steel-making grades. It is understood that the iron will be sold to the Bethlehem Steel Co. and billed by this company to its customers. Some of the iron is due on old contracts bearing a price of about $50 a ton. The question of covering for their requirements in the first half of next year is apparently uppermost in the minds of some consumers. Many sellers are discouraging talk of 1919 business at this time. No basic iron has been sold for that delivery so far as reported, but a number of makers of foundry iron are said to have booked some orders. In the case of low phosphorus iron, none can be sold at any time without the direct sanction of the Director of Steel Supply. Odd lots of offgrade iron are occasionally sold, but otherwise trading is at a standstill. We quote standard grades of iron f.o.b. furnace, with the exception of Virginia iron, for which the delivered prices are quoted:

Eastern Pennsylvania No. 1 X	$34.00
Eastern Pennsylvania No. 2 X	33.50
Eastern Pennsylvania No. 2 foundry	33.00
Virginia No. 2 X (including freight)	37.60
Virginia No. 2 foundry (including freight)	37.10
Basic	32.00
Gray forge	32.00
Bessemer	35.20
Standard low phosphorus	53.00
Low phosphorus (copper bearings)	50.00

Coke.—Coke is being shipped with regularity on some contracts, but a number of furnaces are now compelled to use by-product coke. There is very little spot business. We quote 48-hr. blast furnace coke at $6 and 72-hr. foundry coke at $7, f.o.b. Connellsville.

Ferroalloys.—More inquiry has been coming out as a result of the letter recently sent to consumers by James A. Farrell, chairman of the Sub-Committee on Ferroalloys of the American Iron and Steel Institute, in which he deprecated hand-to-mouth buying and urged steel companies to cover their wants for some time ahead. A good deal of the new inquiry has come from the Pittsburgh district and is for the remainder of this year and for the first half of next year. Several Eastern consumers have been holding off in the hope that they might obtain deliveries of ferromanganese from England on old contracts made at a price of $140 to $150 a ton. On 70 per cent ferromanganese, producers are quoting $250, f.o.b. furnace, freight allowed, and on 16 to 18 per cent spiegeleisen $75, f.o.b. furnace, these prices applying for any delivery.

Billets.—We quote 4 x 4-in. open-hearth rerolling billets at $51.30, Philadelphia.

Finished Material.—The plate situation is unchanged. Allocations are being received in about the usual volume. Plate mills have lost some of their output in the past week or 10 days because of the extremely hot weather. The only structural letting of note is 5000 tons for the new howitzer plant of the Midvale Steel & Ordnance Co. at Nicetown, which went to the McClintic-Marshall Co. We quote plates, 3.48c.; plain structural material, 3.23c.; steel bars, 3.13c.; No. 10 blue annealed sheets, 4.48c.; No. 28 black sheets, 5.23c.; No. 28 galvanized sheets, 6.48c. and bar iron, 3.73c., all Philadelphia.

Old Materials.—An announcement of a 30-day embargo on shipments of borings and turnings to blast furnaces, excepting those making low phosphorus iron, is published elsewhere in this issue. The Committee on Steel and Steel Products of the American Iron and Steel Institute takes this drastic action at the request of the Sub-Committee on Scrap Iron and Steel, of which W. Vernon Phillips, Philadelphia, is chairman, to prevent the shutting down of rolling mills, which are experiencing an acute shortage. Blast furnaces have been paying the maximum price, $19, plus the commission, and as their specifications are less rigid than those of the rolling mills, they have been getting the bulk of the material. Some borings and turnings are not fit for rolling mill use and these may be shipped to blast furnaces, if a permit is obtained from the sub-committee. Production of borings and turnings is increasing in keeping with enlarged production of shells and other munitions, and it is believed that there will be enough for all users. The Sub-Committee on Scrap Iron and Steel has obtained a ruling from Provost General Crowder that men employed in scrap yards will be considered as engaged in essential work and will not be required to go to shipyards or other war plants. An announcement is also expected shortly from the Priorities Division of the War Industries Board giving priority to scrap yards on coal, machinery and transportation, thus recognizing the essential character of the scrap business in the manufacture of iron and steel. Minimum prices which have been quoted on some grades of scrap are disappearing and the present shortage is making it easy for dealers and producers to get the maximum prices permitted under the Government schedule. In addition, the 3½ per cent commission is being paid to dealers almost without exception. Many consumers have, however, made contracts direct with producers to avoid payment of this commission, and dealers are finding it more and more difficult to procure sufficient supplies to fill their orders. In some cases, munition plants have sold their output of scrap for a year ahead. We quote the following prices for delivery at buyers' yards in eastern Pennsylvania, the minimum quotations in most instances applying only on small lots which dealers or producers sometimes wish to move quickly at a concession:

No. 1 heavy melting steel	$29.00
Steel rails, rerolling	34.00
No. 1 low phosphorus heavy, 0.04 and under	39.00
Low phosphorous, 0.04 and under	36.50
Low phosphorous, 0.06 and under	$32.00 to 34.00
Old iron rails	39.00
Old carwheels	29.00
No. 1 railroad wrought	34.00
No. 1 yard wrought	33.00
Country yard wrought	29.00
No. 1 forge fire	28.00 to 29.00
Bundled skeleton	28.00 to 29.00
No. 1 busheling	31.00
No. 2 busheling	17.00 to 18.00
Turnings (for blast furnace use)	18.50 to 19.00
Machine shop turnings (for rolling mill use)	18.50 to 19.00
Cast borings (for blast furnace use)	18.50 to 19.00
Cast borings (clean)	19.00
No. 1 cast (for steel plant use)	29.00
No. 1 cast (cupola sizes)	34.00
Grate bars	27.50 to 28.50
Stove plate	28.00 to 29.00
Railroad malleable (for steel plants)	26.00 to 27.00
Railroad malleable (for malleable work)	34.00
Wrought iron and soft steel pipes and tubes (new specifications)	33.00
Ungraded pipe	29.00

New York

NEW YORK, Aug. 13.

Pig Iron.—Furnaces in Eastern Pennsylvania, having been unable to obtain an adequate supply of either Connellsville or Virginia cokes, called upon the National Fuel Administrator for relief and were notified that it would be necessary for them to use by-product coke to be shipped from the seaboard. This has accordingly been done and involves an expenditure of $1.70 per ton more than Connellsville coke would cost. While it is hoped that this condition will be temporary, there is no definite assurance that enough coke will be produced in the Connellsville region to meet the requirements of the furnaces. This fact is likely to be presented for consideration with others when the question of fixing prices of pig iron for the fourth quarter is taken up at Washington. The feeling that prices will be advanced $2 or $3 per ton is growing in some quarters. Although the blowing out of the Standish furnace reduces the production of low phosphorus pig iron, it is believed that consumers will not suffer, as great care is being taken in the distribution of the iron. Generally speaking, the allocation of iron is progressing satisfactorily. During the past few days, the operation of many furnaces has not been very satisfactory on account of the high humidity. We quote prices as follows for tidewater delivery on Northern and Southern grades:

No. 1 X	$35.40
No. 2 X	34.00
No. 2 plain	33.90
No. 2 X Virginia	37.90
No. 1 Southern (all rail)	42.20
No. 2 Southern (all rail)	40.70

Finished Iron and Steel.—The status of the fabricated steel business is indicated in the failure of the Government to get any bids in the East on the Marine Railroad at San Diego, Cal., though some may, of course, come from Pacific Coast fabricators; and in the case of a dry kiln and storage building involving several hundred tons on which only one bidder agreed to meet the specification requirements of completion in 75 days. With the low rate of output owing in part to scarce and inefficient labor, fabricators are finding it difficult to do the work offered in the time required and with the rapidly advancing labor and other costs, they are not inclined to consider business very far in the future. The general situation thus indicates how difficult it would be at the present time to obtain consideration for a speculative or business structure even were it possible to secure the material. Some of the fabricators in the East are only able to run at about 50 per cent of their capacity and with months of work in sight at this rate they are not concerned over the absence of private buying. In fact, one large fabricator is still shipping material on contracts closed two years ago. Some interest is being taken in the results of bids which will be received Aug. 19 on the 6200 tons of structural steel work at the Mare Island Navy Yard and the 1900 tons for the Bureau of Yards and Docks, Navy Department, at Norfolk. Some sales of Bessemer merchant bars totaling 800 tons for export are noted and also about 200 tons of shell steel billets, the last at about $84 per ton, for Japan. We quote mill shipments as follows: Steel bars, 3.145c.; shapes, 3.245c.; plates, 3.495c; and bar iron, 3.745c., all New York. Out-of-store prices are 1c. higher.

Cast-Iron Pipe.—Cast-iron pipe shops engaged in making pipe for use in connection with housing operations of the Government have received positive assurance from Washington that adequate supplies of pig iron will be promptly shipped. Makers of pipe are much pleased by the assurance of Director Replogle that their product will be considered an essential. Government prices, including the new freight rates, are as follows: $61.75, New York, for 6-in. and heavier; and $64.75 for 4-in.; $71.75 for 3-in., with $1 additional for class A and gas pipe.

Old Material.—The 30-day embargo on shipments of borings to blast furnaces except those making low phosphorous pig iron, has been received with surprise by old material dealers in this district, but no one is disposed

to complain. The labor situation is getting worse all the time, but dealers are hopeful that in some way the Government will come to the rescue. They are, of course, gratified by the ruling that workers in scrap yards are not regarded as employees in a non-essential industry. We quote prices of brokers to New York producers and dealers per gross ton New York, as follows:

Heavy melting steel	$26.20
Rerolling rails	30.80
Relaying rails	$60.00 to 70.00
Iron and steel car axles	43.70
No. 1 railroad wrought	30.80
No. 1 railroad wrought, cut to not less than 10 in. or over 24 in.	35.80
Wrought-iron track scrap	28.80
Forge fire	23.50 to 24.00
No. 1 yard wrought long	29.80
Light iron	10.00 to 11.00
Cast borings (clean)	16.25 to 16.50
Machine shop turnings	16.25 to 16.50
Mixed borings and turnings	16.25 to 16.50
Iron and steel pipe (1 in. minimum diameter), not under 2 ft. long	29.30 to 30.80
Stove plate	26.00
Locomotive grate bars	26.00
Malleable cast (railroad)	30.50 to 31.00
Old carwheels	25.80

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, are:

No. 1 machinery cast	$34.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	34.00
No. 1 heavy cast, not cupola size	29.00
No. 1 cast (radiators, cast boilers, etc.)	$27.00 to 28.00

Ferroalloys.—The buying of ferromanganese in the past week, mainly in the Central West, has included lots of 1000 tons or more. It has been furthered apparently by the circular of the ferroalloys committee urging consumers to provide for their requirements for at least a portion of 1919, so that those engaged in developing domestic ores might know what to count on. At the same time there are steel interests which seem to be satisfied to meet the problem of 1919 requirements later. While there has been quite a stimulus given to manganese mining, as well as to the production of chromite, through the efforts set on foot at Washington, the quality of domestic manganese ores is relatively lower than what has been developed by those working in chrome. Brazilian manganese ores apparently will be needed to the full extent of the program laid out some time ago, when arrangements were made for Scandinavian ships to operate between Brazil and the United States. The ferromanganese transactions of the week were at $250, delivered, for 70 per cent, and $4 more for each additional unit of manganese. We quote spiegeleisen at 875, furnace for 16 per cent; for each additional unit the charge is $3.50. Some sales of ferrosilicon are reported, and a Middle Western steel company is in the market for 500 tons for 1919. We quote $152.50 per ton on contracts involving several hundred tons; $157.50 on 100-ton lots, and $162.50 on carload lots. The $2.50 advance represented by these prices stands for the estimated average of the freight advances of June 24.

Cincinnati

CINCINNATI, Aug. 13—(*By Wire*).

Pig Iron.—The impending or really existing shortage of foundry iron has brought about its partial allocation to firms engaged in very important work. Heretofore only basic was vitally affected. A well-known firm now expects a stricter distribution of all kinds of pig iron and melters of foundry iron not engaged in essential work will probably be left without a supply. A few stove makers have enough iron to carry them through the remainder of the year, but others who have purchased iron for future delivery may not be able to get the metal unless conditions change materially. A rumor that a Southern producer had some gray forge for prompt disposal brought in a number of urgent inquiries from firms engaged in both essential and non-essential work. There is very little off iron to be had in the South for prompt delivery and in the Hanging Rock district none can be obtained for any shipment. A Southern furnace interest that was willing to take on first half business is now discouraging purchases for that delivery. Reports from all districts show that the extreme high temperature prevailing has curtailed production to a very large extent. There has been also some slowing down in rolling mill operations, but not as marked as in steel making. Foundries have had trouble in securing steady labor during the hot period.

Based on freight rates of $3.60 from Birmingham and $1.50 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, No. 2 foundry and No. 2 soft	$36.60
Southern Ohio, No. 2	34.50
Basic, Northern	33.50

Finished Material.—Twisted reinforcing concrete rods are wanted urgently for manufacturing buildings that are for additions to plants engaged in war work. Corrugated bars have been substituted freely of late and plain rounds are also sometimes used. Shipments from the mills are improving, but no real relief is yet in sight. Wire fencing is not to be had and wire nail stocks have been almost exhausted. An occasional carload of wire nails is received by jobbers, and it has become necessary to carefully parcel out such shipments in order to take care of the urgent requirements of customers whose names have been on the books of the different firms for a number of years. Cold-rolled shafting is also hard to get and stocks are being exhausted. A number of pledges have been sent in by jobbers to the National Supply and Machinery Dealers' Association that nothing will be sold a nonessential industry. It is understood that these pledges are sent to Washington and later on may have some bearing on the ability of dealers to secure further supplies from the manufacturers. High-speed steel is very firm at $2 per lb. and business is good. A few brands might be obtained below the figure named, but the order would have to be of attractive size.

The following are local jobbers' prices: Steel bars and small structural shapes, 4.13c. base; large rounds and squares 2 in. and over, 4.23c. base; plates, 4.48c. base; No. 10 blue annealed sheets, 5.48c.; steel bands, 3/16 in. and lighter, 4.98c. base (using the new band list). Reinforcing concrete bars, 4.23c., and wire nails, $4.25 to $4.50 per keg base.

Old Material.—The chief effort of the foundries now is to lay in a stock of scrap to carry them through the remainder of the year. Not much interest is taken in contracting for next year and melters are principally concerned in getting enough scrap for this year. So far the shortage has not developed into anything serious, but at the present rate of consumption there is no telling what may happen. More scrap than ever before is being used in foundry mixtures and it is impossible to get any metal that can be used for making steel, unless it is for essential purposes. Prices are very firm. The following are dealers' prices f.o.b. at yards in carload lots:

	Per Gross Ton
Bundled sheet scrap	$21.50 to $22.00
Old iron rails	33.50 to 34.00
Relaying rails, 50 lb. and up	44.50 to 45.00
Rerolling steel rails	32.00 to 32.50
Heavy melting steel scrap	27.50 to 28.00
Steel rails for melting	27.50 to 28.00
Old carwheels	29.00 to 29.50

	Per Net Ton
No. 1 railroad wrought	$29.50 to $30.00
Cast borings	14.00 to 14.50
Steel turnings	14.50 to 15.00
Railroad cast	25.00 to 25.50
No. 1 machinery	29.50 to 30.00
Burnt scrap	17.50 to 18.00
Iron axles	40.00 to 40.50
Locomotive tires (smooth inside)	35.50 to 36.00
Pipes and flues	21.00 to 21.50
Malleable cast	24.50 to 25.00
Railroad tank and sheet	18.50 to 19.00

Coke.—The Fuel Administration has not been issuing any very urgent calls for either furnace or foundry coke during the past few days. This would indicate that the situation is easing up somewhat, or that the oven operators have lined up their customers and are able to take better care of their wants. The hot weather has cut down production in all districts, but not to the extent expected. Labor troubles have had some bad effect in some districts, although no strikes have been declared as the result of agitation reported. The local and nearby foundries have lately been getting shipments more promptly and a few of them have accumulated a sufficient amount of coke to carry them through the next 60 days. Delays of shipments enroute are less fre-

quent, and it is now conceded that the railroads are doing everything possible to move the fuel to destination.

British Steel Market

Large Italian Order for Tin Plates—Scarcity of Pig Iron

(*By Cable*)

LONDON, ENGLAND, Aug. 14.

Pig iron is harder to get. There is a heavy demand for hematite. American semi-finished steel is unobtainable. A large Italian order for tin plate is reported. The present basis is 33s. 7½d. Ferromanganese is quiet at $250 to $270 c.i.f. Current quotations on various products are as follows:

Tin plate, coke, 14 x 20; 112 sheets, 108 lb., f.o.b. Wales, 33s. 7½ to 33s. 10½d.
Ferromanganese, $250 to $270, c.i.f. for export to America; £26 10s. for British consumption.
Ferrosilicon, 50 per cent, c.i.f., £35 upward.
On other products control prices per gross ton are:
Hematite pig iron, East Coast, £6 2s. 6d.; West Coast, £6 7s. 6d.
Cleveland pig iron (export), £5 5s. for No. 1 and £6 6s. for basic. Domestic prices, 6s. below these figures.
Steel plates, ship, bridge and tank, £11 10s. to £17, according to size.
S. M. boiler plates, basis, £12 10s.
Bar iron, standard quality, basis £13 17s. 6d.; marked, £16.
Sheet and tin plate bars, £10 7s. 6d.
Blooms and billets for rerolling (ordinary), £10 7s. 6d.; special quality, £11.
Wire rods, £21 10s. net, basis.

French Engineers Visiting American Munitions Plants and Arsenals

WASHINGTON, Aug. 13.—To secure closer industrial co-operation between the industries of the United States and France, a mission of French ordnance engineers and experts has come to this country for a three months' study of munition plants and arsenals. The present enormous supply demands of General Foch's army makes this work exceedingly important. The head of the mission is Lieut. Col. L. Martinon, for many years in charge of manufacturing at the great French ordnance plant of Schneider & Cie, LeCreusot. The other engineers are Capt. H. Guillemin, Lieuts. Blanchat, H. Dutilh, P. Berthier and A. Combier. With the mission are also a score of foremen from French munitions plants. The purpose of this mission is to make the best possible use of the industrial resources of the two countries in the output of ordnance material.

Following a reception by Maj. Gen. C. C. Williams, Chief of Ordnance, the members of the mission are now engaged in conference with members of the engineering division. In the near future the mission will be divided into groups representing the various subjects on which the members of the mission are particularly expert. To each group will be attached officers of the Ordnance Department who are also experts on these subjects. The group and attached officers will consider not only the engineering features involved, but also inspection and production features, where particular projects are far enough advanced to permit.

The mission visits the United States as the result of a conference between the French Minister of Munitions and the chief ordnance officer of the American Expeditionary Forces. It is probable that a mission of American experts and superintendents and foremen of munitions plants and arsenals will visit France after the return of the French mission, which will be in about three months. In this way it is proposed to develop a constant exchange of views and information between those engaged in the munitions industry in the two countries.

The Ordnance Department at Washington has placed orders with Landers, Frary & Clark, New Britain, Conn., for 500,000 bayonets and 2,000,000 army mess knives. The price of the knives, 10¾c, is the lowest ever paid.

IRON AND INDUSTRIAL STOCKS

Response to Favorable War Developments Limited by Restricted Credit and Conservative Tendency of Public

NEW YORK, Aug. 12.

In response to favorable war developments stock transactions the past week were in slightly greater volume than of late and at somewhat higher levels, both being held, however, within narrow limits automatically set by the present small supply of credit available for speculation outside of the large requirements for war work and crop needs. No market stimulation is now anticipated until the next Liberty loan is absorbed. Interest continues to center on industrial issues, railroad securities being left alone pending the establishment of a standard railroad control contract with the Government more favorable to holders of these securities. The greatest gain among steel company securities was 4⅜ points by United States Steel, com.; preferred fell off, however, ⅜ point. Crucible Steel, com., advanced 3¼; pref., ⅜; Bethlehem Steel, class B, 2¼; com., ⅝; pref. 8's dropped 1½ points; Midvale Steel, com., advanced 1⅜; Lackawanna Steel, com., 1¾; Republic Iron & Steel, com., 2; pref., ⅜; Superior Steel, com., 1⅜; pref., no change; United Alloy Steel, com., rose ½; Gulf States Steel, com., 1½; Colorado Fuel & Iron, com., 1⅞.

Trading in Baldwin Locomotive, com., resulted in a transfer of 123,500 shares, with a net increase of 5¼ points, the largest advance experienced by any of the metal-working industrials during the week's transactions. A rise of 4¼ points in International Harvester of New Jersey followed the settlement of the Government's suit against that corporation. Important fiscal announcements made include earnings by the Midvale Steel & Ordnance Co. of $12,108,753 for the past fiscal year, and a gross business amounting to about $400,000,000 by the Bethlehem Steel Corporation for the current year.

The range of prices on active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chal. com..	33¼- 34	Int. Har. Corp. com	65½- 65¾
Allis-Chal. pf....	83¼- 84	Int. Har. Corp. pf.	108
Am. Can com....	46½- 47¾	Lackawanna Steel	83 - 84¾
Am. Can pf.....	94 - 94¾	Lake Sup. Corp..	19¼- 20¼
Am. C. & F. com.	84 - 85¾	Midvale Steel ..	52 - 54¼
Am. Car & F. pf.	107½-108¾	Nat. Acme	31 - 32
Am. Loco. com...	66¼- 67¾	Nat. E. & S. com	51¼- 52
Am. Loco. pf....	97½- 99	Nat. E. & S. pf..	95
Am. Ship com.....	122½	N. Y. Air Brake..	127 -129
Am. Steel Fdries.	73½- 75	Nova Scotia Steel	69
Bald. Loco. com.	91⅝- 96½	Pressed Steel com	70¼- 73
Bald. Loco. pf...	93⅞-100⅝	Pressed Steel pf.	95 - 98
Beth. Steel com..	83¼- 85	Ry. St. Spr. com.	60⅜- 62¾
Beth. Steel cl. B.	83⅜- 85¼	Ry. St. Spr. pf...	100¼-100¾
Central Fdy. com.	32 - 32⅛	Republic com....	91⅜- 93⅜
Central Fdy. pf....	43	Republic pf.	100⅝-101
Chi. Pneu. Tool..	68½- 69½	Sloss com.	60 - 62½
Colorado Fuel...	46 - 47½	Superior Steel....	41¾
Cruc. Steel com..	65½- 70	Un. Alloy Steel..	38½- 39
Cruc. Steel pf....	90½- 91⅛	U. S. Pipe com..	13½- 14⅜
Deere & Co. pf.....	94	U. S. Steel com..	108⅝-112¾
Gen. Electric....	144¾-146	U. S. Steel pf....	110 -110⅝
Gt. N. Ore Cert..	31¼- 32½	Va. I. C. & Coke..	72¾
Gulf States Steel	83 - 85⅝	Warwick	8¼- 8½
Int. Har. of N. J. com.	128 -129	Westinghouse El.	41 - 42½
Int. Har. of N. J. pf.	108		

The Steel and Iron Products Co. Established

The Steel & Iron Products Co., a new company in process of incorporation, has been organized by C. H. Gockeler, formerly with the Steel Products Export Co., New York, and Lester P. Lane, lately vice-president of the Smiley Steel Co., New York. The Steel & Iron Products Co. is engaged in an export and steel brokerage business and has established headquarters at 30 Church Street, New York. Mr. Gockeler at one time represented in New York the Hoopes & Townsend Co., Philadelphia. Mr. Lane began his career in the New York office of the Pennsylvania Steel Co. and remained for some time with the New York office of the Bethlehem Steel Co., when the latter absorbed the Pennsylvania company.

Metal Markets

Cents Per Pound for Early Delivery

	Copper, New York		Tin,	Lead		Spelter	
		Electro-	New	New	St.	New	St.
August	Lake	lytic	York	York	Louis	York	Louis
7	26.00	26.00	*94.00	8.05	7.75	8.57½	8.25
8	26.00	26.00	*94.00	8.05	7.75	8.57½	8.27½
9	26.00	26.00	*94.00	8.05	7.75	8.70	8.45
10	26.00	26.00	*94.00	8.05	7.75	8.70	8.45
12	26.00	26.00	*94.00	8.05	7.75	8.80	8.50
13	26.00	26.00	*94.00	8.05	7.75	8.80	8.50

*Nominal.

NEW YORK, Aug. 14.

The official price on copper of 26c. is continued until Nov. 1. Tin continues dull. Scarcity of supplies is the outstanding feature of the lead market. Spelter showed increasing strength throughout the past week. Antimony is quiet and unchanged.

New York

Copper.—Other than the announcement of the War Industries Board that the 26c. official price on copper would be continued until Nov. 1, the copper market has been without feature during the week. The announcement of the War Industries Board on the copper price was as follows:

The President has approved an agreement, made between the producers of copper and the price-fixing committee of the War Industries Board (after investigation by this committee in conjunction with the Federal Trade Commission as to cost of production), that the maximum price of copper shall be 26c. per lb., taking effect Aug. 15, 1918, for shipments after said date, but subject to revision after Nov. 1, 1918, f.o.b. cars or lighters at Eastern refineries, f.o.b. cars or lighters at Pacific Coast refineries for Pacific Coast destinations, and f.o.b. cars or lighters New York if shipped to Eastern or interior destinations from Pacific Coast refineries and from refineries in the interior of the United States. All shipments made after Nov. 1, 1918, are subject to any change in price made by the price-fixing committee to take effect after that date. This maximum price is subject to the additional charges on copper shapes approved by the price-fixing committee on June 5, 1918. The conditions are: First, that the producers of copper will not reduce the wages now being paid; second, that they will sell to the United States Government, to the public in the United States, and to the allied Governments at not above the maximum price; third, that they will take the necessary measures, under the direction of the War Industries Board, in the distribution of copper to prevent it from falling into the hands of speculators, who might increase the price to the public; and fourth, that they will pledge themselves to exert every effort necessary to keep up the production of copper so as to insure an adequate supply so long as the war lasts.

Producers will continue to sell copper on the basis of the price at time of delivery. It is reported in the trade that the price fixing committee of the War Industries Board ruled that contracts made at the 23.50c. price automatically increased to 26c. if shipment had not been made prior to the time the 26c. price went into effect.

Tin.—Buyers are showing little interest at present. Apparently they are awaiting the outcome of the conferences of the tin experts sent to England as a part of a special mission from this Government. John Hughes, chairman of the American Iron and Steel Institute's committee on pig tin, and George M. Armsby, chief of the tin section of the War Industries Board, are the members of the mission who will study the tin situation. It is hoped in the trade that some action may result which will facilitate trading between this country and England. There have been fair arrivals during the week, including a steamer from Java, which reached an Atlantic port with 885 tons of tin aboard. Another steamer from Java brought 400 tons to a Pacific port. The London cable of Aug. 12 gave the quotation of spot Straits at £387 10s., as compared with £394 10s. the week before.

Lead.—Scarcity of supplies is the principal feature of the lead market. Prices continue firm at 7.75c., St. Louis, and 8.05c., New York, but producers are considering only essential business having Government approval. Speculators have small stocks of lead for which they are getting varying prices. A carload was sold a few days ago at 8.75c., New York.

Spelter.—A Government purchase of 3000 tons strengthened the market during the week. Spelter has shown a rising tendency and was firm yesterday at 8.50c., St. Louis, and 8.80c., New York.

Antimony.—The market is quiet and the price continues at 13c. to 13.25c., New York, duty paid, for prompt and early delivery.

Aluminum.—No. 1 virgin metal, 98 to 99 per cent pure, and scrap have a fixed Government price of 33c. per lb. in 50-ton lots, of 33.10c. in 15 to 50-ton lots and of 33.20c. in 1 to 15-ton lots.

Old Metals.—The market is quiet. Dealers' selling prices are as follows:

	Cents per lb.
Copper, heavy and crucible	26.00
Copper, heavy and wire	25.00
Copper, light and bottoms	23.00
Brass, heavy	17.75
Brass, light	13.25
Heavy machine composition	26.00
No. 1 yellow rod brass turnings	14.75 to 15.25
No. 1 red brass or composition turnings	23.50
Lead, heavy	7.625
Lead, tea	6.25
Zinc	6.75

Chicago

Aug. 13—Settlement of the price on copper to Nov. 1 at 26c. is accepted with some disappointment, especially as to the period covered. Most producers desired Oct. 1 to be the limit of the present price, and many asked an advance. Demand for copper continues steady, spot business being especially strong. Little tin is offered for future shipment, but supplies have been adequate recently for all immediate needs. Lead is difficult to obtain. Spelter is in small demand. We quote copper at 26c. for carloads and 27.30c. for less than carloads; tin, 98c. to $1; lead, 7.85c., nominal; antimony, 14c. to 15c. On old metals we quote buying prices, less than carload lots, as follows: Copper wire, crucible shapes, 22.50c.; copper clips, 21.75c.; copper bottoms, 20.50c.; red brass, 22.50c.; yellow brass, 15.50c., lead pipe, 6c.; zinc, 5.50c., pewter, No. 1, 57.50c.; tinfoil, 67.50c.; block tin, 80c.

St. Louis

Aug. 12.—Non-ferrous metals have been rather quiet, with some weakness in zinc, resulting in lower quotations thereon, although there was a slight advance at the close of the week. On car lots we quote the closing to-day as follows: Lead, 7.75c; spelter, 8.32½c. On less than car lots the quotations were: Lead, 8.25c; spelter, 8.85c to 9c; tin, $1.10, with none available; copper, 27.85c; Asiatic antimony, 16c. In the Joplin district the weakness of the zinc market let the second grade ores down as low in some cases as $42.50 per ton basis of 60 per cent metal, although the usual quantity of top grade ores was sold at $75 per ton. Because of the amount of low grade ore sold, which ranged from $42.50 to $47.50, the average for the week for the district was held down to $49 per ton. Calamine was steady and in good demand at $25 to $35 per ton basis of 40 per cent metal, with the average for the week for the district at $35 because of the premium grade ores sold at quotations.

Progress at Neville Island Gun Plant

It is now stated that the Neville Island gun and projectile plant, which is under construction by the Ordnance Department of the United States Steel Corporation, will probably be making 18-in. guns in nine to 12 months from the time work was actively started, which was about July 1. It is said these 18-in. guns will have an accurate range of 30 miles or more, the 18-in. shells carrying 900 lb. of trinitrotoluol. The Mesta Machine Co. is said to have received large contracts for piercing presses and draw benches for the Neville Island plant. The Ordnance Department of the Steel Corporation has leased for several years the Park Place Hotel at Sewickley, Pa., just across the Ohio River from Neville Island. It will be used as homes for officials and others employed at the plant.

SCRAP SITUATION SERIOUS

Scarcity of Old Material on Pacific Coast—Advisory Committees Appointed

SAN FRANCISCO, Aug. 10.—The scrap situation at some points on the Pacific Coast is serious at the present time. The steel plants and foundries depend to a large extent on scrap for their raw material, and at Portland and Seattle some foundries report that they have not a sufficient supply on hand to last 24 hours. The appointment of Emory E. Smith by the American Iron and Steel Institute's sub-committee on scrap iron and steel to be its representative on the Pacific Coast is favorably received, and his appointment of local men to handle local situations is heartily indorsed. While most of the fabricated material going into the new ships comes from the Eastern mills ready to be put together, a considerable amount of work is being done in local shops and foundries which can not be handled in the East. As these plants depend so largely upon scrap, the whole shipbuilding problem in the Northwest may be said to be wrapped up in the scrap supply.

Mr. Smith is rapidly perfecting his organization, and on Aug. 5 appointed an advisory board with headquarters in San Francisco and an advisory committee for each of the subsidiary districts, Southern California, Washington and Oregon, with headquarters respectively at Los Angeles, Seattle and Portland. The advisory board is made up of one representative each of the United States Shipping Board, the War Trade Board, the steel mills, the gray iron foundries, the steel foundries, the scrap iron and steel dealers and the Emergency Fleet Corporation. The several committees are made up of all the interests affected by the distribution of scrap. Great power is given Mr. Smith in handling this situation, and he has planned a campaign to search the entire West for the materials needed to keep the Coast foundries and mills supplied. Each user and dealer of scrap must file weekly reports of stocks and disposition of stocks, and the head office directs supplies to the places where they are most needed. By no other method could the industry be maintained under the present scarcity. One feature which Mr. Smith especially wishes to call to the attention of the trade is that practically all scrap being used in making iron and steel products on this Coast is going into war work and is being sent away from the Coast, whereas in normal times a very large percentage of it would eventually become scrap again and could be used repeatedly. When the scrap on the Coast is cleaned up it will be necessary to find another source of raw material or shut down the industry on the Coast.

The following are the members of the advisory board and the several committees:

ADVISORY BOARD

369 Pine Street, San Francisco.

Capt. A. F. Pillsbury, United States Shipping Board, 369 Pine Street, district manager; C. O. G. Miller, War Trade Board, Custom House, export agent; John L. Key, steel mills, Pacific Coast Steel Co., Rialto Building, San Francisco; C. M. Henderson, gray iron foundries, H. C. Macauley Foundry Co., West Berkeley, Cal.; H. H. Whiting, steel foundries, Best Steel Casting Co., San Leandro, Cal.; Wm. H. McDaniel, scrap iron and steel dealers, California Iron Yards Co., San Francisco; J. Q. Brown, Emergency Fleet Corporation, Division of Production, United States Shipping Board, 719 Sheldon Building, San Francisco.

ADVISORY COMMITTEE, LOS ANGELES DISTRICT

928 Title Insurance Building,
Los Angeles, Cal.

A. C. Denman, Jr., steel mills, Southern California Iron & Steel Co., Los Angeles; H. S. Hitchcock, foundries, Baker Iron Works, Los Angeles; Philip Senegram, scrap iron and steel dealers, Los Angeles; H. G. Haley, wooden ship division, United States Shipping Board, Los Angeles; K. W. Ransom, steel ship division, United States Shipping Board, Los Angeles.

ADVISORY COMMITTEE, WASHINGTON DISTRICT

806 Alaska Building,
Seattle, Wash.

Capt. John F. Blain, United States Shipping Board, Seattle; F. B. Sumner, gray iron foundries, Sumner Iron Works, Everett, Wash.; F. G. Frink, steel foundries, Washington Iron Works, Seattle; W. A. Fannon, division of production, Emergency Fleet Corporation, Seattle; T. S. Clingan, steel mills, Pacific Coast Steel Co., Seattle; M. Neider, scrap iron and steel dealers, Neider & Marcus, Seattle.

ADVISORY COMMITTEE, OREGON DISTRICT

520 Oregon Building,
Portland, Ore.

Lloyd J. Wentworth, United States Shipping Board, Portland; Joseph F. Stiens, division of production, Emergency Fleet Corporation, Portland; A. M. Clark, steel foundries, Columbia Steel Co., Portland; C. E. Grelle, gray iron foundries, Independent Foundry Co., Portland.

Power Situation in the Pittsburgh District

WASHINGTON, Aug. 13.—The War Industries Board has secured the assistance of the War Department to help out the power situation in the Pittsburgh district. The present power supply in that region is inadequate for the Government and other work placed there. The West Penn Power Co. has agreed with the War Department to build a 40,000-kw. station at the mouth of the coal mine in the Allegheny Valley and to connect it up by appropriate transmission system with the distribution system of Pittsburgh. The estimated cost of the plant and transmission lines is $5,000,000. The Ordnance Department will advance $2,000,000 of this amount, and the company, through its bankers, will provide the other $3,000,000. At a period three years after the end of the war, the reduplication cost of the plant is to be determined by three disinterested appraisers—one chosen by the Secretary of War, one by the company and the third by agreement of the first two, and their finding is to be subject to review and revision by the Secretary of War. The company undertakes to repay to the Government such part of the advance made by the Government as represents the excess of the appraised value over the $3,000,000 originally put up by the company.

Proposals have also been made by other companies to extend their plants, or to build new plants in the Pittsburgh district, provided the War Department would advance 40 per cent of the cost and the War Finance Corporation would make the other 60 per cent available. These, says the War Industries Board, are not looked upon with favor by the Government. Unless more favorable proposals are submitted, says the board's statement, "the Government has under consideration the building of its own plants where they are needed in this district."

Government May Finance Woodward Steel Plant

Announcement that the War Industries Board had received a recommendation that the building of a steel plant by the Woodward Iron Co. be financed to the extent of $25,000,000 has aroused much interest in Birmingham, Ala. A. H. Woodward, chairman of the board, and R. H. Bannister, president Woodward Iron Co., have been in New York conferring with the board of directors of the company on the proposition, and the belief is that the project will be undertaken. The Woodward company has upwards of 50,000 acres of land and a good site can be obtained for the plant. The company has five furnaces in operation, and plenty of ore, coal and limestone.

Fifty Koppers by-product ovens will be erected by the Birmingham Coke & By-Products Co., the concern recently organized by Morris W. Bush and associates, which the Government is financing to the amount of between $2,500,000 and $3,000,000.

The Sloss-Sheffield Steel & Iron Co. has engineers now on the scene preparing for the actual construction of the 120 Semet-Solvay by-product coke ovens to be built at North Birmingham. The plant will be in operation, it is hoped, within 12 months.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

An advance in freight rates of 25 per cent from Pittsburgh on finished iron and steel products, including wrought iron and steel pipe, went into effect June 25, 1918. The rates from Pittsburgh, in carloads, to points named, per 100 lb. are as follows: New York, 24.5c.; Philadelphia, 23c.; Boston, 27c.; Buffalo, 17c.; Cleveland, 17c.; Cincinnati, 23c.; Indianapolis, 25c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; Denver, 99c.; Omaha, 59c.; minimum carload, 36,000 lb. to four last named points; New Orleans, 38.5c.; Birmingham, 57.5c.; Pacific Coast, $1.25; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is $1.315, minimum carload 40,000 lb.; and $1.25, minimum carload 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 50c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 50c., minimum carload 46,000 lb.; to St. Paul and Minneapolis, 49.5c., minimum carload 46,000 lb.; Denver, 99c., minimum carload 46,000 lb. A 3 per cent transportation tax applies. On iron and steel items not noted above, rates vary somewhat and are given in detail in the regular railroad tariffs.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in. angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, structural sizes, 3c.

Wire Products

Wire nails, $3.50 base per keg; galvanized, 1 in. and longer, including large-head, barb roofing nails taking an advance over this price of $2, and shorter than 1 in., $2.50. Bright basic wire, $3.35 per 100 lb.; annealed fence wire, Nos. 6 to 9, $4.25; galvanized wire, $3.95; galvanized barb wire and fence staples, $4.35; painted barb wire, $3.65; polished fence staples, $3.65; cement-coated nails, $3.40 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 47 per cent off list for carload lots, 46 per cent for 1000-rod lots, and 45 per cent off for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....$4.40 base
Large boiler rivets.....$4.50
⅞-in. x 6 in. smaller and shorter rivets..50-10 per cent off list
Machine bolts h.p. nuts, ⅞ in. x 4 in.:
Smaller and shorter, rolled threads....50-10-5 per cent off list
Cut threads.....50-5 per cent off list
Larger and longer sizes.....40-10 per cent off list
Machine bolts, c.p.c. and t. nuts, ⅞ in. x 4 in.:
Smaller and shorter.....40-10 per cent off list
Larger and longer.....35-5 per cent off list
Carriage bolts, ⅞ x 6 in.:
Smaller and shorter, rolled threads.....50-5 per cent off list
Cut threads.....40-10-5 per cent off list
Larger and longer sizes.....40 per cent off list
Lag bolts.....50-10 per cent off list
Plow bolts, Nos. 1, 2, 3.....50 per cent off list
Hot pressed nuts, sq., blank.....2.50c. per lb. off list
Hot pressed nuts, hex., blank.....2.30c. per lb. off list
Hot pressed nuts, sq., tapped.....2.30c. per lb. off list
Hot pressed nuts, hex., tapped.....2.10c. per lb. off list
C.p.c. and t. sq. and hex. nuts, blank.....2.25c. per lb. off list
C.p.c. and t. sq. and hex. nuts, tapped.....2.00c. per lb. off list
Semi-finished hex. nuts:
⅜ in. and larger.....60-10-10 per cent off list
7/16 in. and smaller.....70-5 per cent off list
Stove bolts.....70-10 per cent off list
Store bolts.....2½ per cent extra for bulk
Tire bolts.....50-10-5 per cent off list

The above discounts are from present lists now in effect. All prices carry standard extras.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, $57; chain rods, $65; screw, rivet and bolt rods and other rods of that character, $65. Prices on high carbon rods are irregular. They range from $70 to $80, depending on carbon.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16 in. x 4½ in. and heavier, per 100 lb., $2.80, in lots of 200 kegs of 200 lb. each, or more; track bolts, $4.80. Boat spikes, $5.25 per 100 lb., f.o.b. Pittsburgh.

Terne Plate

Effective May 21 prices on all sizes of terne plates are as follows: 8-lb. coating, 200 lb., $15 per package; 8-lb. coating, I. C., $15.50; 12-lb. coating, I. C., $17.00; 15-lb. coating, I. C., $18.00; 20-lb. coating, I. C., $19.00; 25-lb. coating, I. C., $20.50; 30-lb. coating, I. C., $21.75; 35-lb. coating, I. C., $22.75; 40-lb. coating, I. C., $24.00 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.90c. from mill. Refined iron bars, 3.50c. in carload and larger lots, f.o.b. mill.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card, as announced Nov. 5 by the Government on steel pipe, those on iron pipe being the same as quoted for some time:

Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
⅛, ¼ and ⅜	44	17½	⅛ and ¼	23	+4
½	48	33½	⅜	24	+3
¾ to 3	51	37½	½	28	10
			¾ to 1½	33	17

Lap Weld

2	44	31½	1¼	18	3
2½ to 6	47	34½	1½	25	11
7 to 12	44	30½	2	26	12
13 and 14	34½	..	2½ to 6	28	15
15	32	..	7 to 12	25	12

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜	40	22½	⅛, ¼ and ⅜	22	5
½	45	32½	½	27	14
¾ to 1½	49	36½	¾ to 1½	33	18
2 to 3	50	37½			

Lap Weld, extra strong, plain ends

2	42	30½	1¼	19	4
2½ to 4	45	33½	1½	25	11
4½ to 6	44	32½	2	27	14
7 to 8	40	26½	2½ to 4	29	17
9 to 12	35	21½	4½ to 6	28	16
			7 to 8	20	8
			9 to 12	15	3

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent. Prices for less than carloads are four (4) points lower basing (higher price) than the above discounts on black and 5½ points on galvanized.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers are seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe are nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh, announced Nov. 13, as agreed upon by manufacturers and the Government:

Lap Welded Steel		*Charcoal Iron*	
3½ to 4½ in.	34	3½ to 4½ in.	12½
2½ to 3¼ in.	24	3 to 3¼ in.	+ 5
2¼ in.	17½	2½ to 2¾ in.	+ 7½
1¾ to 2 in.	13	2 to 2¼ in.	+22½
		1¾ to 1⅞ in.	+35

Standard Commercial Seamless—Cold Drawn or Hot Rolled

	Per Net Ton		Per Net Ton
1 in.	$340	1¾ in.	$220
1¼ in.	280	2 to 2½ in.	190
1⅜ in.	270	2¾ to 3¾ in.	180
1½ in.	220	4 in.	200
		4½ to 5 in.	220

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiation.

Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots, are as follows:

Blue Annealed—Bessemer	Cents per lb.
No. 8 and heavier	4.20
Nos. 9 and 10	4.25
Nos. 11 and 12	4.30
Nos. 13 and 14	4.35
Nos. 15 and 16	4.45
Box Annealed, One Pass Cold Rolled—Bessemer	
Nos. 17 to 21	4.80
Nos. 22 and 24	4.85
Nos. 25 and 26	4.90
No. 27	4.95
No. 28	5.00
No. 29	5.10
No. 30	5.20
Galvanized Black Sheet Gage—Bessemer	
Nos. 10 and 11	5.25
Nos. 12 and 14	5.35
Nos. 15 and 16	5.50
Nos. 17 to 21	5.65
Nos. 22 and 24	5.80
Nos. 25 and 26	5.95
No. 27	6.10
No. 28	6.25
No. 29	6.50
No. 30	6.75
Tin-Mill Black Plate—Bessemer	
Nos. 15 and 16	4.80
Nos. 17 to 21	4.85
Nos. 22 to 24	4.90
Nos. 25 and 27	4.95
No. 28	5.00
No. 29	5.05
No. 30	5.05
Nos. 30½ and 31	5.10

PERSONAL

John Hughes, assistant to president United States Steel Corporation, chairman of the Pig Tin Committee of the American Iron and Steel Institute, and Paul Mackall, Bethlehem Steel Co., who is chief of the rail, alloy steel and projectile bar section of the steel division, War Industries Board, Washington, were members of a party of 11, headed by L. L. Summers, who arrived in London last week. Mr. Summers, as spokesman for Chairman Baruch, will sit as one of the American representatives on the Munitions Council at London. Other members of the party are George M. Armsby, chief of the tin section, War Industries Board, and Lincoln Hutchinson, mineral expert.

R. M. Little, who has succeeded Arthur H. Young as director of the American Museum of Safety, 14 West Twenty-fourth Street, New York, began his career as a Presbyterian minister. In March, 1917, by appointment of President Wilson, he became chairman of the United States Employees' Compensation Commission, which organized a safety survey of Federal industrial establishments. Later he was made a trustee of the American Museum of Safety. Chester C. Rausch has been appointed assistant director of the museum. Mr. Rausch is a mechanical engineer, educated at the Massachusetts Institute of Technology, and was later safety engineer at the Portsmouth Navy Yard. The next annual safety congress and safety exhibition of the National Safety Council, with which the American Museum of Safety will collaborate, will be held on Sept. 30 to Oct. 5 in the Statler Hotel, St. Louis.

C. E. Drayer has been elected secretary of the American Association of Engineers with headquarters at 29 South LaSalle Street, Chicago. Mr. Drayer has been actively engaged in engineering society work for the past eight years. After graduating from college in Cleveland and serving on Western railroads for several years he returned to Cleveland and became field engineer of the Nickel Plate Railroad on grade elimination work. He became an active worker in the Cleveland Engineering Society and was very successful in presenting engineering subjects in a popular way, thus advancing the engineer in public esteem and encouraging engineers to train themselves to be leaders in service to the community. After two years of marked success in Cleveland he addressed many engineering organizations in regard to methods of popularizing the efforts of engineers. In 1915 he became associated with Dr. F. H. Newell in forming the Committee on Engineering Co-operation, of which he is secretary. He recently formulated the plan of combined membership of the American Society of Engineers and the Cleveland Engineering Society, and present indications are that this plan will be adopted by other societies.

E. P. Dillon, manager of power division, New York office, Westinghouse Electric & Mfg. Co., has resigned to become general manager of the Research Corporation of New York. Mr. Dillon went to the Westinghouse company in 1909, having been previously connected with various mining and electric companies in Colorado. In 1917 he was transferred to the New York office as manager of the railroad and power divisions. For several years he was assistant to the manager of the railway and lighting department at East Pittsburgh, being in charge of power house and apparatus work. He was transferred to the New York office as manager of the railroad and power divisions in 1917.

F. L. Collins, formerly with the Dominion Iron & Steel Co., Sydney, Nova Scotia, has resigned and has been appointed superintendent of the electrical department of the Neville Island gun and projectile plant, Ordnance Department, United States Steel Corporation.

C. L. Altemus has resigned his connection with the Pacific Commercial Co., New York, to become assistant purchasing agent of the American International Steel Corporation, 120 Broadway, New York, being associated with A. H. Hudson. Mr. Altemus was formerly in the metallurgical and later in the sales department of the Cambria Steel Co., and for a time was identified with the American Steel Export Co.

H. C. Du Bois, formerly in charge of sales of ferromanganese and spiegeleisen for E. J. Lavino & Co., Philadelphia, has been commissioned a captain by the War Department. Mr. Du Bois is attached to the War Industries Board, and will remain in that capacity indefinitely.

Edwin M. Lavino of E. J. Lavino & Co., Philadelphia, has been commissioned a first lieutenant in the Quartermaster's Department of the Army.

C. C. Horner has been appointed manager of the Cleveland office of the William F. Davis Machine Tool Co., New York. He succeeds G. G. Sears, who has been called for Army service.

H. A. Meeker, formerly with Charles W. Wolff, Singer Building, New York, dealer and exporter of steel and machinery, has become purchasing agent for R. M. Ford & Co., Inc., exporter, 149 Broadway, New York.

C. C. Hayward, secretary Ironton Fire Brick Co., Ironton, Ohio, has assumed additional duties as sales representative of the Davis Fire Brick Co. and Ohio Fire Brick Co., Oak Hill, Ohio, and the Black Fork Clay Products Co., Black Fork, Ohio. Mr. Hayward is well known in iron and steel circles in the Central West, being formerly connected with the Cincinnati office of the Jones & Laughlin Steel Co.

Thomas McDonald, consulting engineer in the Youngstown district of the Carnegie Steel Co., has been named the manufacturers' representative on the community labor board of the United States Employment Service for that district.

H. P. Pitts, San Francisco, has resigned as commercial manager of the local district for the Pacific Gas & Electric Co. to become purchasing agent at the new plant of the Bethlehem Shipbuilding Corporation to be located at Alameda, Cal.

John R. Shea has left for Tokyo, Japan, to represent the Western Electric Co.'s manufacturing interests there.

William F. Schweigert, who has been affiliated with the Niagara Machine & Tool Works, Buffalo, for 30 years, has been elected secretary of the company.

C. C. Winningham, automobile factory executive of Detroit, has been appointed chief of the gasoline section, bureau of conservation, oil division, United States Fuel Administration, and director of publicity for the oil division. Mr. Winningham will conduct a campaign to stop wastage of gasoline and oils.

Harold Hart, manager motor truck department, Nash Motors Co., Kenosha, Wis., has accepted a commission as a captain in the Quartermaster's Department, United States Army. Charles W. Nash, president of the company, recently was appointed assistant to John D. Ryan, Director of Aircraft Production, and assigned to take charge of engineering and production.

L. R. Boyer, formerly with the United States Bureau of Standards, has joined the organization of E. & T. Fairbanks & Co., scale manufacturers, St. Johnsbury, Vt.

C. L. Kelley, who has been connected for the past 14 years with the United States Steel Products Co., four years of which was spent in Montreal, Canada, as assistant manager of sales, severed his connection with that company on June 1 to become resident manager in New York of the American Steel Co. of Cuba.

R. E. Forthman, for many years with the service department of the Landis Tool Co., Waynesboro, Pa., has been placed in charge of grinding operations for the Wright-Martin Aircraft Corporation, Long Island City, N. Y.

Warren C. Drake, for some years identified with the stoker engineering department of the Westinghouse Electric & Mfg. Co., New York, has entered into partnership with H. S. Sleicher under the firm name of Sleicher & Drake, 5 Beekman Street, New York, specializing in power-plant equipment.

War Board Refuses to Recognize Union

Collective Bargaining Favored, but Employees Will Not Be Forced to Change Policy—Interesting Provision for Electing Shop Committees

WASHINGTON, Aug. 13.—In its decision granting the demands of the striking employees of the St. Joseph Lead Co., Herculaneum, Mo., for increased wages, the National War Labor Board incorporated a rejection of the employees' demand for the recognition of their union. This rejection is of particular interest in the light of the decisions of the board in previous controversies. Representatives of the board, however, declare that it is strictly in line with the board's previous policy. They declare that the board will protect the rights of the men to join unions, and will even continue to put examiners into plants to make sure that no employee is discharged because he has joined a union. Where the union, however, has not been recognized by the employing company previous to the war the board will make no decision in favor of its present recognition.

"The request of the employees," declared the decision of the board in the St. Joseph case, "for recognition of their organization by the company, and for an annual contract with the company, is denied for the reason that no such arrangements were in force prior to the submission of this controversy. The principles upon which the National War Labor Board is founded, however, guarantee the right to employees to organize and to bargain collectively, and there shall be no discrimination or coercion directed against proper activities of this kind. Employees in the exercise of their right to organize also shall not use coercive measures of any kind to compel persons to join their unions, or to induce employers to bargain or deal with their unions. As the right of workers to bargain collectively through committees has been recognized by the board, the company shall recognize and deal with such committees after they have been constituted by the employees."

Wages Advanced

The statement of the board announcing the findings of the arbitrators concerning wages and conditions declares:

> The arbitrators found the increase in wages to be necessary in order to maintain in full health and efficiency the workers in this primary war industry, which produce one-ninth of all the lead mined in this country. The product goes chiefly into bullets and shrapnel. It was found that the workers, who are peculiarly subjected to the danger of "lead poisoning," had suffered an alarming number of workless days through sickness, and were often supported during such periods from the funds of their labor union, since their wages were frequently too low to make possible any savings. For the same reason many workers were obliged to default in their Liberty Loan payments. The efficiency of the plant had likewise suffered from an enormous labor turnover, sometimes as high as 200 per cent per annum, partly due to the rate of wages.
>
> The arbitrators granted the wage increase on a sliding scale, in harmony with the principle recently applied by the Railroad Wage Commission, giving to the $3.00 a day men a flat raise of $1.00, or 33 1/3 per cent, and graduating the rate of increase down to 10 per cent or 50c a day for those earning $5. For those earning more than $5 a day the increase was merely nominal. In thus favoring the least skilled workers, and in establishing a minimum wage of $4 a day, the arbitrators were guided by the board's principle that "minimum rates of pay shall be established which will insure the subsistence of the worker and his family in health and reasonable comfort." As in all other awards made by the board, it is here provided that these rates of pay may be readjusted at intervals of six months in conformity with the change in the cost of living.
>
> The arbitrators also granted 50 per cent additional pay for the first two hours worked in excess of eight hours per day, and double pay for additional hours, as well as for Sundays and holidays. The plant during the war has been working on a 7-day basis.

The administration of the award is placed in the hands of a representative of the board, whose decision is to be final in each case, pending appeal. The award is made retroactive to April 21.

Election of Shop Committees

The text of the award of the National War Labor Board in the dispute between the General Electric Co. and its employees at the Schenectady, N. Y., and Pittsfield plants, contains an interesting provision for the election of shop committees at the Pittsfield plant, selected by the men themselves under a secret ballot. These committees are to do the "collective bargaining" approved by the board. A system of collective bargaining already prevails in Schenectady. The provision for the election of these committees in the Pittsfield award follows:

> The election by the workers of their representative department committee to present grievances and mediate with the company shall be held, during the life of this award, in some convenient public building in the neighborhood of the plant, to be selected by the examiner of this board assigned to supervise the execution of this award, or, in case of his absence, by some impartial person, a resident of Pittsfield, to be selected by such examiner. Such examiner, or his substitute, shall preside over the first and all subsequent elections during the life of this award, and have the power to make the proper regulations to secure absolute fairness. In the election, the examiner shall provide, wherever practicable, for minority representation by limiting the right of each voter to a vote for less than the total number of the committee to be selected. The election shall be held annually.

The duties of these committees include the adjustments of disputes which the shop foremen and employees are unable to adjust. The committees also are to select annually three employees to be known as a committee on appeals, who shall meet with the management to adjust disputes which the shop committees have been unable to adjudicate.

Both decisions grant wage increases of from 10 to 20 per cent, order the abolition of the present bonus system, establish the principle of equal pay for equal work, whether performed by men or by women, and fix a minimum wage for the unskilled and semi-skilled workers. In the case of the Pittsfield plant the board ordered the abolition of the individual contract system, which the men asserted was an anti-union weapon, and which chiefly caused the present dispute.

Provision as to Bonuses

The award will govern working conditions in these plants for the period of the war, except that revisions of the wage scale may be made at periods of not less than six months, in case this seems justified by a change of conditions, such as an increase in the cost of living. In both cases it is ordered that the bonuses formerly granted by the company be paid henceforth as wages. In addition to these bonuses a 20 per cent increase was ordered for all workers at Pittsfield, with 5 per cent additional compensation for night workers. In Schenectady the flat increase was 10 per cent in addition to bonuses to all workers, and a 15 per cent increase to the steamfitters, carpenters, painters, narrow and wide-gage men, metal polishers

and pattern makers. The 5 per cent additional compensation for night workers is ordered here also. All adult women workers were granted a flat increase of 20 per cent, and a minimum wage of $15 per week was established. For male workers of 21 years or over the minimum was fixed at 42 cents per hour. In Pittsfield, the minimum for adult women workers of six months' experience is fixed at 30 cents per hour. The board took especial cognizance of the scrubwomen in the offices of the Schenectady plant, granting them a minimum wage of $10.50 per week. W. L. C.

Troubles in New England

Blacksmiths and allied workers at the United States Arsenal, Watertown, Mass., went on strike Aug. 8, claiming that they are not being paid the wages that the United States Shipping Board recommended for Government workmen. The strikers claim that by the award of the Shipping Board the men received different scales ranging from $4 to $10.80 a day, but that the maximum wage for these men at the arsenal is $5.76 a day. Col. C. M. Wesson, commandant, gave out a statement that the number of strikers was 88, and that the strike would not interfere with production at the arsenal.

The American Hardware Corporation, New Britain, Conn., has voluntarily established a new bonus system in its plants. The first bonus was paid Aug. 10 in the form of 10 per cent on the amount earned by each employee during the month of July. The bonus is figured upon the actual earnings, and an employee late at work or absent from work does not lose the right to benefit from the bonus on his actual earnings.

The hearings before the National War Labor Board in the controversy at the Lynn, Mass., plant of the General Electric Co. were suspended Aug. 7 because 500 men in one department had gone on a strike. The strike was caused by the discharge of an employee who, it was alleged, was selling baseball lottery tickets, and by the subsequent discharge of a committee which requested his reinstatement. The War Labor Board recommended that the man charged with having the lottery tickets in his possession be reinstated, that two of the committee be discharged temporarily and three suspended for a week while their cases were considered. Upon this basis the men returned to work Aug. 9 and the hearings were resumed. There is much interest in the award to be made in the Lynn controversy, as one of the chief points of contention is union recognition.

The employees of the Commonwealth Steel Co., Granite City, Ill., having been unable to agree with the management of the plant on their demand for an increase of 30 to 50 per cent in wages, the matter has been taken up to the War Labor Board by President Clarence Howard, of the company, and officials of the men's organization will also appear before the board at Washington in connection with the case. About 2800 men are affected by the closing of the plant through the demands of about 500 concerned in the wage dispute.

Labor Conditions in Wisconsin

MILWAUKEE, WIS., Aug. 12.—Approximately 15,000 unskilled workers will be sent from Wisconsin to other States by Oct. 1 unless manufacturers engaged in war work report immediately the number of such laborers they need, according to George P. Hambrescht, chairman of the Industrial Commission of Wisconsin, director of the federal employment service for Wisconsin and chairman of the Federal War Labor Board for this State. The quota of Wisconsin for the transfer of labor from non-essential to essential industries during August and September is 8695, but up to Aug. 10 Wisconsin war industries have asked for only slightly more than 2000 men.

Between 600 and 700 employees of the Power & Mining Machinery Co., Cudahy, Milwaukee County, were on strike at the close of last week in support of a demand for higher wages. It is stated that the trouble was accentuated by the remarks of Dr. Willis A. Moore, who is engaged in rallying labor in support of the Government shipbuilding program, and who told the workers that if they struck they would be classed as pro-Germans, Huns, slackers and traitors. Early in June the workers requested shorter hours, and pay equivalent to that paid by the Emergency Fleet Corporation. On Aug. 1 the basic 8-hr. day was made effective in the plant, meaning an increase of about 5 per cent in wages. Later a demand was made for more pay, first-class men asking 72c; second-class, 65c, and common labor, 46c an hour. Officials of the company called a mass meeting at noon on Aug. 7 to hear Dr. Moore, and the remarks made by him on this occasion are said to have resulted in a strike of about one-half of the working force.

At Manitowoc, Wis., employees of the Manitowoc Foundry & Machine Co. and the Richards Iron Works, both engaged in producing material for the Manitowoc Shipbuilding Co., went on strike on Aug. 6. Federal labor conciliators have been called to adjust the trouble.

Between 400 and 500 shipbuilders, carpenters and mechanics employed by the Milwaukee Dry Dock Co. left their work on Wednesday afternoon, Aug. 7, but returned to work on Friday and Saturday, following a conference with Irving Pond, representing the Emergency Fleet Corporation in the Great Lakes region. The strike was called to enforce demands for improved sanitary conditions and a reduction of hours of work.

The P. B. Yates Machine Co., Beloit, Wis., on Aug. 6 informed its employees that the basic 8-hour day had been adopted as of Aug. 1. The works will continue to maintain the former schedule of 10 hours a day, the men receiving time and a half for the two hours' overtime worked daily. However, the advanced rate will not be paid for fractional hours unless more than 10 hours are worked in any one day.

Governor E. L. Philipp of Wisconsin has issued an official statement to the effect that the State Draft Administration will not permit the selective draft in any way to become a factor in industrial disputes. The announcement refers particularly to labor disputes at Madison, the State capital.

Homes for 2000 Workers at Niagara Falls

The United States Home Registration Service Committee of Niagara Falls has been organized for the purpose of acquiring by purchase or lease buildings which will be converted into lodging and boarding houses and apartment houses for war workers, and also to secure rooms and small homes for immediate occupancy to provide for the hundreds of workers now coming to that city for industries engaged on war contracts. The Federal Government has appropriated $1,600,000 for the construction of 350 houses there, but the committee is organized to provide housing facilities immediately and until the completion of the houses to be erected by the Government. Available quarters will be required for about 2000 employees.

Appeal to Coke Workers

UNIONTOWN, PA., Aug. 12.—Wiley L. Byers, vice-chairman of the Connellsville regional fuel committee since its creation by Dr. H. A. Garfield, was this week named manager of production for the region by J. B. Neale, director of production for the United States Fuel Administration. Mr. Byers is charged with responsibility for keeping the region going at the peak of production and to secure that end is given much authority. He assumes charge of the labor supervising system recently established by the regional committee to keep a check on labor slackers. He is now considering the appointment of a personal representative at every mine in the region to whom he may issue orders governing that particular operation. The plant representative will also be asked to investigate "slackers" reported to headquarters by the operators.

So excellent were the results obtained by the recent educational campaign that another tour of the coke region by war speakers has been commenced. Lieuten-

ant Petrenko of the Russian Army and Sergeant Austin Beck of the Canadian Army are each evening appealing to the men to give their country six days a week at the mines in the same spirit that Americans in France are giving their lives.

Production for the week ending Aug. 3 showed a slight increase when reduced to coal, although coke itself fell off slightly. That was explained at the Fuel Administration because of the intense hot weather and because a number of coke producing plants were now producing by-product coal. The coke output for the week was 342,664 tons, while coal production was 174,582 tons.

To Stabilize Labor

The United States Department of Labor, Washington, recently has issued several posters in order to assist in stabilizing labor. One of these posters, known as No. 5, reads as follows:

WHY

does drifting from job to job give comfort to the Kaiser?

BECAUSE

idle machines reduce production and weaken our Army.

* * *

WHY

does Uncle Sam need you on the job?

BECAUSE

the fighters for freedom must be armed and fed and clothed.

* * *

A chain is only as strong as its weakest link. You are a link in the chain of production. If you do not stay on the job you weaken the chain.

STICK TO YOUR JOB

until the U. S. Employment Service asks you to change.

U. S. DEPARTMENT OF LABOR.

W. B. WILSON,
Secretary of Labor.

Another circular reads as follows:

AMERICA'S STRENGTH

Germany's strength is in the willingness of her military caste to sacrifice her people. They see the big prize—the chance to rule the world—and they are willing to pay the price in German suffering.

To hold democracy—the right to rule ourselves and to be free men—America's strength lies in the willingness of our people to freely pay even a bigger price and make even a greater sacrifice.

* * *

We must rise above thinking too much of profits or wages. We should be ashamed of what money we are getting just because of the war.

When our Sammies return they will ask us only one question:

"What did YOU do to help win the war?"

U. S. DEPARTMENT OF LABOR.

W. B. WILSON,
Secretary of Labor.

Copies may be obtained by addressing Roger W. Babson, Chief, Information and Education Service, Department of Labor, Washington.

June and July Operations in Iron and Steel

The report of C. H. Markham, regional director of the Allegheny region of the United States Railroad Administration, covering operations for June and July, is of great interest to the steel industry. It says that transportation conditions were fair and showed continued improvement. Freight traffic, considering the volume, moved with reasonable promptness. There was no congestion, as the movement of business to the larger industrial centers and for export is controlled by permits. The car supply was generally good and met the demand. Blast furnace operations reports for the last week in June and July show:

	June Per Cent	July Per Cent
By-product coke ovens in operation	95	93
Blast furnaces in operation	94	90
Open hearth and Bessemer converters in operation	88	85

Operations, according to the report, were not affected by any transportation deficiencies, but shortage of mechanics and laborers is retarding progress in repairing bad order cars, resulting in an accumulation above normal. Repairs to locomotives are progressing.

EMBARGO ON SCRAP

Turnings Not to Be Shipped to Blast Furnaces for Thirty Days

The Committee on Steel and Steel Products of the American Iron and Steel Institute, at the request of the Sub-Committee on Scrap Iron and Steel, has placed an embargo for 30 days on shipments of borings and turnings to blast furnaces. An exception is made in the case of makers of low phosphorus pig iron.

This action was taken to prevent shutting down of iron rolling mills, which are experiencing an acute shortage due to the fact that blast furnaces will pay the maximum price, $19, delivered, plus 3½ per cent commission, which is all that rolling mills are permitted to pay. As specifications of rolling mills are very severe in comparison with those of blast furnaces, dealers and producers have naturally been shipping very largely to the furnaces.

The Sub-committee on Scrap Iron and Steel has for some time past discouraged sales of scrap to blast furnaces on the ground that no additional metal is thus produced, but furnaces have bought, nevertheless, because of lower production costs which are possible when scrap is mixed with the ore. The sub-committee believes that the 30-day embargo will relieve conditions. Large tonnages of borings and turnings are now being produced by munition plants, and it is believed there should be enough of this grade of scrap to supply all users. Should another serious shortage occur, it might result in the placing of an embargo for the duration of the war on the purchase of this material by blast furnaces.

The statement of the Committee on Steel and Steel Products, as made by Chairman Gary, is as follows:

Committee's Statement

In order that rolling mills manufacturing bar iron and also open-hearth steel plants may secure shipments of wrought iron and steel turnings, it is hereby recommended that for a period of 30 days, commencing Monday, Aug. 19, and expiring Sunday, Sept. 22, no wrought iron or steel turnings of any character be shipped to blast furnaces for the manufacture of pig iron, with the exception of turnings that are being used strictly for the manufacture of low phosphorus pig iron by the following interests:

Midvale Steel & Ordnance Co., Coatesville, Pa.
Robesonia Iron Co., Robesonia, Pa.
Northern Iron Co., Standish, N. Y.
Northern Iron Co., Port Henry, N. Y.
Cranberry Furnace Co., Johnson City, Tenn.
Delaware River Steel Co., Chester, Pa.
Thomas Furnace Co., Milwaukee, Wis.
Eastern Steel Co., Pottstown, Pa.

In the event of the turnings being of such nature that they cannot be used by rolling mills or steel plants, on presentation of these facts to W. Vernon Phillips, chairman Sub-Committee on Scrap Iron and Steel, Pennsylvania Building, Philadelphia, a special permit may be issued for such shipment.

In cases where parties desiring to comply with this recommendation are now under contract for shipments of borings or turnings to blast furnaces, it is believed that cancellation of pro rata portions of such contracts can be arranged on application to the chairman of the Sub-Committee on Scrap Iron and Steel.

It is hoped that all interests concerned will rigidly follow this request, as it is of vital necessity at this time.

NEW YORK, Aug. 12.

Scrap Men Necessary

Provost Marshal General E. H. Crowder has ruled that men employed in scrap yards are in an essential industry and not subject to the "work or fight" order applicable to idlers and those engaged in non-productive occupations.

Plans are being made for putting in effect river and canalized waterway traffic between St. Louis and Chicago, as a result of the Railroad Administration's desire to relieve the pressure on the railroads on account of war and domestic demands.

Machinery Markets and News of the Works

MORE AIRPLANE BUYING

Pierce-Arrow Closes for Tool Equipment

Locomobile Co. of America May Buy for Manufacture of Tank Motors

Expansion of the airplane program is noted in the machine tool markets. Since the recent large buying by the Wright-Martin Aircraft Corporation other companies have made purchases, including the Pierce-Arrow Motor Car Co., Buffalo, which will acquire sufficient equipment to make 50 Hispano-Suiza airplane motors a day beginning Jan. 1. The purchases of this company include 40 grinders and a large number of lathes. The H. H. Franklin Mfg. Co., Syracuse, N. Y., is adding to its equipment for grinding crankshafts for Rolls-Royce motors. The Willys-Overland Co., Toledo, Ohio, will also increase its motor-making equipment.

The Locomobile Co. of America, Bridgeport, Conn., has obtained quotations for equipping an addition to its factory for the manufacture of motors for fighting tanks. Orders have not been placed.

It is reported unofficially that negotiations are progressing between the Railroad Administration and the Baldwin Locomotive Works for the construction of two new locomotive works, one in Chicago and another in the South. Quotations on cranes for the Chicago plant have been obtained.

Additions to the boiler-making capacity of the country to supply boilers for merchant ships are making business for crane manufacturers and makers of plate-working machines and machine tools. At least three large shops will probably be built in the East.

Government buying of machine tools for shipment to France will again assume large proportions. The Director of Purchases for Military Railways will buy upwards of $1,000,000 worth of tools and many cranes for locomotive shops in France.

Announcement is made by the Chief of Ordnance of the War Department that plans have been completed for one of the largest gun relining plants in the world. It is to be built in France at a cost of $25,000,000 to $30,000,000. Machine tools will cost about $12,000,000 to $15,000,000. Large orders have already been placed for gun-boring lathes, engine lathes, rifling machines and grinders.

It is reported that negotiations are in progress with a number of companies in the Chicago district to make 155 mm. guns and shells. New war contracts are being placed in the East, although the recent Government order creating a barred zone is restricting building projects. The Leaside Munition Co., Toronto, Ont., has started work on a new factory to make 12-in. shells for the United States Government.

A feature of the Cincinnati market is the placing of orders with machine-tool builders there for the Argentine Government. Further purchases are said to be contemplated. Other South American countries have lately been interested in tool equipment, mainly for munition work.

The Philadelphia trade is expecting that contracts will be placed soon for tools for the new howitzer plant which the Midvale Steel & Ordnance Co. will build at Nicetown. A few tools have been bought, but the bulk of the business is still to be placed.

Several companies have bought in the New York market in the past week. The American Radiator Co. closed for several large tools for its gun plant at Bayonne, N. J. The Ordnance Engineering Co., New York, bought automatic screw machines for making star shells. The Watervliet Arsenal, Watervliet, N. Y., closed for $165,000 worth of tools.

In New England the principal buyers were the Osgood Bradley Car Co. and the Rockwell Sprinkler Co., both of Worcester, Mass.

Crane business continues fairly active, the largest inquiry of the week coming from the Air Nitrates Corporation, New York, which requires 18 cranes. The American Radiator Co. has inquired for seven 7½-ton cranes. The Whiting Foundry Equipment Co., through its Philadelphia office, received the contract for cranes for the new boiler shop of the Barber Asphalt Paving Co., Philadelphia.

New York

NEW YORK, Aug. 13.

A fair volume of machine-tool business is being done, but dealers and factory representatives are noting more and more the effect of the recent Government order creating a barred zone in the East. There are fewer Government contracts involving new building operations, although in some cases the Washington authorities are giving permits to erect buildings for essential manufacturing.

The announcement from Washington that automobile manufacturers must turn their plants over 100 per cent to Government work or work of an essential character, thus eliminating pleasure automobiles, leads the trade to believe that the automobile industry will soon be the source of considerable new business. Two large automobile manufacturers in the East are now figuring on new equipment. In both cases, however, they greatly curtailed their output of pleasure cars some time ago. One of these companies is the Pierce-Arrow Motor Car Co., Buffalo, which has bought a large number of new tools for the manufacture of Hispano-Suiza airplane motors. The other is the Locomobile Co. of America, Bridgeport, Conn., which is about to break ground for a new building in which motors for fighting tanks will be manufactured. Quotations have been received on the new equipment needed for this shop. The H. H. Franklin Mfg. Co., Syracuse, N. Y., is adding to its equipment of grinders for crank shafts for Rolls Royce airplane motors.

The Wright-Martin Aircraft Corporation, which purchased about 700 tools a few weeks ago for its Long Island City, N. Y., and New Brunswick, N. J., plants, last week asked dealers and factory representatives, from whom it purchased, for an additional two weeks' cancellation privilege. Later this request was withdrawn and it was announced that factories could make shipments of the orders given to them. The request for extension of the cancellation privilege was probably asked for to safeguard the company against overbuying due to the haste with which it was forced to work up a list of its requirements.

The War and Navy departments continue to speed up production of ordnance and are giving out new contracts. The Ordnance Engineering Co., 120 Broadway, New York, has bought an equipment of automatic screw machines for the manufacture of a new type of star shell. The American

Radiator Co. has recently received a contract for 4.7 in. and 155 mm. gas shells, which will be made in its Elmwood Avenue plant, Buffalo. The Batavia Steel Products Co., Batavia, N. Y., is working on 75 mm. shells, and an affiliated organization, J. J. Carick, Inc., is making 155 mm. shells in a plant at Clyde Avenue and the Delaware & Lackawanna Railroad tracks, Buffalo. These companies bought most of their equipment in Canada. The American Radiator Co.'s gun plant at Bayonne, N. J., last week bought a number of large tools for increasing its output of naval guns.

The Rodney Hunt Machine Co., Orange, Mass., has a contract for punching machines and has bought needed equipment. The Rockwell Sprinkler Co., Worcester, Mass., last week closed for tools for a Government contract. The Osgood Bradley Car Co., Worcester, Mass., added to its equipment for making gun mounts. The Watervliet Arsenal, Watervliet, N. Y., closed a few days ago for $165,000 worth of tools and will soon buy about $200,000 worth more.

The American Locomotive Co., New York, will soon issue a list of tools needed for its various shops. The De Laval Separator Co., Poughkeepsie, N. Y., is inquiring for tools for increasing its output of cream separators. The Screw Machine Products Corporation, Providence, R. I., is in the market for 20 to 30 hand millers for Government work.

The Director of Purchases for Military Railways, whose office is with the General Engineering Depot, Fourteenth and U streets, Washington, will soon purchase about $1,000,000 worth of machine tools for shipment to France. A list of cranes also will be issued soon from the same office. The New York Central has issued a small list.

The largest new crane list of the past week was issued by the Air Nitrates Corporation, 360 Madison Avenue, New York, which will build two plants, one at Toledo, Ohio, and the other at Elizabethtown, Ohio, for the manufacture of nitrogen by atmospheric fixation. Quotations are asked for on 18 cranes, of which four are 10-ton transfer cranes, and the remainder 5 and 20-ton standard bridge cranes. J. N. Kinney, contracting engineer, 30 Church Street, has taken an order from the Thompson-Starrett Co., New York, for 89 chain hoists, from ½ ton to 20 ton capacity, for the Government powder plant at Charleston, W. Va. The Federal Shipbuilding Co., Kearny, N. J., has awarded an order for two 20-ton and three 10-ton overhead cranes to the Milwaukee Electric Crane & Mfg. Co. The Pawling & Harnischfeger Co. took the order for seven cranes from the Sun Shipbuilding Co., Chester, Pa., which was mentioned last week as having been let. This is only a part of the requirements for the new boiler shop which the Sun Shipbuilding Co. will build. An order for 17 cranes for the new boiler shop of the Barber Asphalt Paving Co., Philadelphia, has been awarded to the Whiting Foundry Equipment Co. The Newport News Shipbuilding & Dry Dock Co.'s crane inquiry is still pending. The Crucible Steel Co. of America is building a 75-ton crane at its Midland, Pa., works for its new forge shop at Harrison, N. J. The Fox Brothers Co., 126 Lafayette Street, New York, requires a 25-ton crane for its shop at Catasauqua, Pa. The U. S. & Cuban Allied Engineering Works, 50 Broad Street, New York, require a 15-ton crane, 30-ft. span. Lockwood, Greene & Co. have awarded to Alfred Box & Co., Philadelphia, an order for a 5-ton and a 10-ton crane for the Driver-Harris Co., Harrison, N. J. The Kennedy Foundry Co., Baltimore, Md., has bought a 10-ton crane from the Chesapeake Iron Works. The Pennsylvania Crusher Co., Philadelphia, has bought a 10-ton Shepard crane. The Electric Controller & Mfg. Co. has sold eight magnets to Perin & Marshall, engineers, for the Tata Iron & Steel Co., Sakchi, India.

The Liberty Machine Tool & Die Co., 692 South Eleventh Street, Newark, N. J., has awarded a contract to the Essex Construction Co., 85 Academy Street, for a one-story machine shop, 80 x 100 ft., on Grove Street, Irvington, to cost $28,000.

The Industrial Wire & Metal Works, Newark, N. J., has filed notice of organization to operate at 95 High Street. Richard Carswell, 277 Lake Street, heads the company.

The Davidson Tool Mfg. Corporation, New York, has been incorporated with a capital of $250,000 by R. B. Huestis, G. and M. B. Green, 122 Maiden Lane.

The American Auto Top Co., 2 Hudson Street, New York, has purchased the plant of H. Armstrong, South Coventry, Conn., fully equipped for the manufacture of automobile truck bodies. Mr. Armstrong remains with the new owner. Geo. H. Quennard is secretary and treasurer.

The Perth Amboy Dry Dock Co., Perth Amboy, N. J., has acquired 530 ft. of waterfront on Staten Island Sound near its present works for extensions. The property is now occupied by the James Shewan & Sons Co., which will remove its plant to another location. It is understood that the new owner will build additions on the site to provide greater shipbuilding capacity. The company now owns 1100 ft. frontage on Staten Island Sound.

The Crucible Steel Co. of America, Harrison, N. J., will build a one-story addition on South Fourth Street, 36 x 230 ft., to cost $18,000, partly for storage. It has awarded contract to W. H. & F. W. Cane, 233 Broadway, New York, for the construction of a one-story gas producer works, 80 x 180 ft., to cost $80,000.

Robert J. Emory & Co., 31 Runyon Street, Newark, N. J., machinists, have awarded contract to the Ruth Realty Co. for the erection of a one-story plant, 60 x 80 ft., at 30-32 Branford Street.

The Graphoscope Development Co., 50 East Forty-second Street, New York, manufacturer of motion-picture machinery, has leased a four-story brick bulding, 62 x 96 ft., at 47-49 Mechanic Street, Newark, N. J., for a new plant. It will be remodeled for early occupancy. It is said that about 300 persons will be employed for initial operations.

Kolb & Suchomel, Inc., Newark, N. J., has been incorporated with a capital of $25,000 by Norman L. Kolb, Carl Suchomel and Julius Peyser, to manufacture sheet-metal flues.

The Atlantic Nail & Wire Co., Newark, N. J., has purchased property at Jelliff Avenue and Bigelow Street, formerly a distributing plant of the Du Bois Brewing Co. The property, about 105 x 160 ft., will be remodeled for the new owner.

The Federal Shipbuilding Corporation, Kearny, N. J., has purchased two additional tracts of land on the Jersey City side of the Hackensack River, known as the Barker and Smith properties, for about $65,000. The site consists of over 12 acres of land and will be used for extensions.

The Oko Machine Shop, Inc., Jersey City, N. J., has been incorporated with a capital of $100,000 by John W. Stout, H. A. Black and John R. Turner, to manufacture machinery, tools, etc.

The Crocker-Wheeler Co., Ampere, N. J., manufacturer of motors, generators, etc., is devoting over 75 per cent. of its capacity to the manufacture of radio equipment and other apparatus for the Government. The plant is working on a 24-hr. schedule.

The Scandia Mfg. Co., Bloomfield, N. J., has been incorporated with a capital of $20,000 by C. A. Cole, Arthur R. Oakley and Paul E. Britsch, to manufacture tools, chucks, etc.

The General Welding Co., 355 Fourteenth Street, Hoboken, N. J., has changed its name to the New Jersey Welding & Equipment Co.

The Lovell-McConnell Mfg. Co., 194 Wright Street, Newark, N. J., known as the Klaxon Co. of the United Motors Corporation, is continuing the purchase of property in the vicinity of its works. During the past week it purchased the block front on Avenue B, between Vanderpool and Miller streets, about 100 x 200 ft., and a site, 150 x 169 ft., at Avenue A and Miller Street. The former purchase included property opposite its plant, including the block of Avenue A and B, Wright and Miller streets, about 200 x 700 ft. It is understood that plans are under way for the erection of an addition.

The L. S. Brach Supply Co., 129 Sussex Avenue, Newark, N. J., manufacturer of railroad signals, lights, etc., has leased property at 217 High Street for a branch works. The company is now operating local plants at Sussex Avenue and Day Street, and at 72 Springfield Avenue.

The Victor R. Browning Co., Cleveland, Ohio, manufacturer of special machinery, has had plans prepared for a two-story reinforced-concrete addition, 50 x 175 ft., to its plant at Twenty-second Street and Third Avenue, Long Island City, N. Y., formerly used by the Auto Press Co.

The R. J. Donovan Co. of New York, 217 Pearl Street, New York, manufacturer of pipe fittings, etc., has increased its capital from $25,000 to $125,000.

The Queensboro Boat Works, Inc., Long Island City, N. Y., has been incorporated with a capital of $75,000, to operate a boatbuilding and repair works. C. Bohl, P. W. Moore and A. S. Honig, Long Island City, are the incorporators.

Parker Stearns & Co., 288 Sheffield Avenue, Brooklyn, manufacturers of automobile accessories, will make extensions and improvements in their factory at Sheffield and Belmont avenues, to cost $12,000.

The Ducker Sectional Building Corporation, New York, has been incorporated with a capital of $50,000 to manufacture portable buildings. O. Schultheis, A. A. Collins and E. B. Boynton, 51 East Forty-second Street, are the incorporators.

The American Mfg. Co., Noble and West streets, Brook-

lyn, has filed plans for the construction of a one-story automobile repair shop, 68 x 196 ft., to cost $25,000.

Arthur Tickle Engineering Works, Delevan Avenue, Brooklyn, have broken ground for a two-story shop, 100 x 100 ft., to cost $30,000, partly for storage.

George H. Thatcher & Co., Leonard Street, Albany, N. Y., manufacturers of iron castings, etc., will build a one-story machine shop, 50 x 100 ft., to cost $15,000.

The Neptune Meter Co., 50 East Forty-second Street, New York, has awarded contract to C. C. Woodruff & Co., 213 Tenth Street, Long Island City, N. Y., for a one-story addition, 25 x 54 ft., to its works, Jackson and Crane avenues, Long Island City.

The Johnson Casting & Mfg. Co., Brooklyn, has been incorporated with a capital of $10,000 by H. B. Britton, G. A. Johnson and J. F. Russell, Jr., 46 Cedar Street, New York.

The Kinetic Engineering Co., New York, has been incorporated with a capital of $50,000, to manufacture motors, foundry supplies, etc. S. L. Baron, A. Mandels and V. Campbell, 152 West 129th Street, are the incorporators.

The Blancke Steel Co., New York, has been incorporated with a capital of $50,000 by A. McNamara, B. R. O'Brien and F. Holman, 165 Broadway, to manufacture steel products.

The Johnson Shipbuilding & Dry Dock Co., 109 Broad Street, New York, has had plans prepared for a one-story repair shop and tool works, 50 x 100 ft., at its plant, Front Street, Stapleton, Staten Island.

The Ericson Instrument Works, New York, has been incorporated with a capital of $20,000 by B. Hardy, R. Lefkowitz and E. Ericson, 60 East 129th Street.

The Fabric Machinery Corporation, New York, has been incorporated with a capital of $40,000 by F. X. Butler, J. C. Duke and B. B. Mead, 1999 Washington Street.

The United States Washer Co., New York, has been incorporated with a capital of $100,000 to manufacture steel and iron washers, nuts, locknuts, etc. J. F. Golding, 1467 Irving Street, N. W., Washington; C. M. Allen, 507 West 179th Street, and E. B. McDuffee, 47 Washington Square, New York, are the incorporators.

The Quartermaster Department, West Point, N. Y., is having revised plans prepared for an automobile repair shop to cost $10,000. Lieut.-Col. W. J. Timberlake is commandant.

The Sundh Electric Co., 51 East Forty-second Street, New York, manufacturer of electric controlling devices, works on Parkhurst Avenue, Newark, N. J., has increased its capital from $120,000 to $170,000.

The Clifton Steel Co., Clifton, N. J., has been incorporated with a capital of $100,000 by C. P. Van Gerdenren and Nicholas Hoedemaker, Clifton, to manufacture heavy hardware and steel specialties.

The Goff Mfg. Co., Collingswood, N. J., has been incorporated with a capital of $250,000 by F. H. and Howard E. Goff, and O. P. Wheaton, to manufacture pneumatic brakes and electrical specialties.

The International High Speed Steel Co., Rockaway, N. J., has inaugurated night shifts at its works for increased output. About 50 men are now being used on the extra schedule.

Buffalo

BUFFALO, Aug. 12.

The Pennsylvania Railroad Co., Buffalo, has commenced the construction of a new engine terminal at its Gardenville Yards, to cost over $700,000. The plant will consist of engine house with capacity for 24 locomotives, machine shop, and other repair buildings, with turntable, and will be designed to handle all freight locomotive repair and construction work in this section. It is expected to have the plant ready for service about Jan. 1, after which the yards and shops on Babcock Street will be used exclusively for passenger and yard engine repair work.

The shop addition to be erected by the Buffalo Dry Dock Co., Buffalo, at its shipbuilding works on Ganson Street, will be used as a punch shop. The structure, 73 x 150 ft., will be an extension to the present two-story punch works, and will later be increased from one-story to two stories. It will cost about $25,000.

The A. H. Pond Co., Inc., Syracuse, N. Y., has been incorporated with a capital of $100,000 by A. H. and R. A. Pond and H. C. Beadel to manufacture clocks.

The Vulcan Steam Forging Co., 251 Rano Street, Buffalo, has increased its capital from $10,000 to $60,000.

Tashenberg Brothers, Buffalo, operating a boiler works at 45 Illinois Street, have filed plans for a one-story brick addition, 18 x 108 ft., providing a total shop area of about 7560 sq. ft.

The Kinkel Mfg. Co., Buffalo, has been incorporated with a capital of $10,000 by R. P., G. A. and E. G. Kinkel to manufacture metal cooking utensils.

The Caldwell-Marshall Co., Chicago, has commenced the construction of a works on property recently acquired on Ellicott Creek, Tonawanda, N. Y., for building concrete barges for canal traffic. Michael Dunn is superintendent.

The Marine Construction Co., Buffalo, has filed plans for a two-story addition to its shipbuilding plant on Michigan Avenue, 58 x 120 ft. The first floor of the new structure will be used as a plate shop and the second floor as a mold loft.

The United States Lens Co., Geneva, N. Y., has awarded a contract to J. J. Prindeville, Framingham, Mass., for the construction of a new one-story plant on Lyceum Street, about 105 x 180 ft., to cost $50,000. The company is also considering the erection of a new power plant. It is having plans prepared for a power house on which work will be commenced shortly. A. T. Wilson, president.

The Pierce-Arrow Motor Car Co., Buffalo, has let general contract on a percentage basis to the Stone & Webster Engineering Corporation, Boston, for a power house addition, 43 x 53 ft., at its plant, Elmwood Avenue and the New York Central Railroad Belt Line, estimated to cost, with equipment, $300,000. It will also add a testing building, 50 x 100 ft.

The H. G. Trout Co., 226 Ohio St., Buffalo, contemplates erection of a one-story extension to its main building at Ohio Street and the New York Central Railroad.

The Buffalo Forge Co., Buffalo, is erecting a storage building at its plant at Broadway and Spring Street.

The Buffalo Metal Goods Co., Winchester and Northland avenues, Buffalo, manufacturer of automobile parts and stamped metal specialties, has taken out building permit for an inspection and shipping building.

The Donner Steel Co., Buffalo, is adding to its plant at Elk Street and Buffalo River, a two-story brick and steel carpenter shop to cost $6,000.

The Barcalo Mfg. Co., manufacturer of iron and brass beds, Buffalo, will build an $8,000 addition to its plant at Louisiana and Republic streets and the Erie Railroad, for the manufacture of specialties.

The Germann Bronze Co., Nineteenth and Chestnut streets, Erie, Pa., has had plans drawn and will build an addition to be used as an office and extension to its machine shop, to cost $10,000. L. Briggs is secretary.

The Buffalo Aeroplane Corporation, 885 Niagara Street, Buffalo, manufacturer of aeroplane propellers, is having plans drawn for a factory building 100 x 130 ft., two stories, to be erected at West and Forest avenues.

The U. S. Hame Co., Buffalo, is planning a four-story factory building, 50 x 94 ft. and 50 x 27 ft., to be added to its plant at Tonawanda Street and the New York Central Railroad.

The Niagara Electro Chemical Co., 2700 Buffalo Avenue, Niagara Falls, N. Y., has had plans prepared for a two-story addition, 38 x 251 ft., to its plant, Buffalo Avenue and the Connecting Terminal Railroad.

The McKinnon Chain Co., Tonawanda, N. Y., will make an extensive addition to its plant at Fremont Avenue and the Erie Railroad.

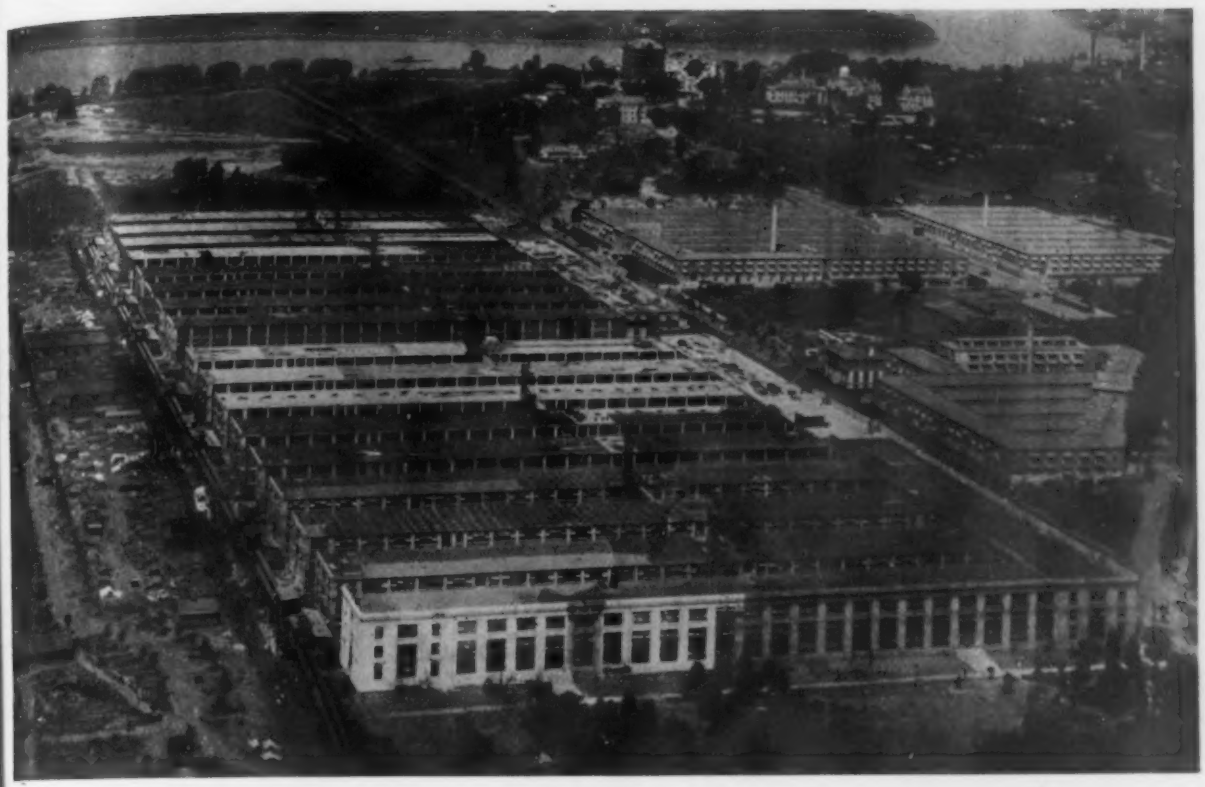
New England

BOSTON, Aug. 12.

Machinery dealers report that business has been rather flat for the last 10 days. The expansion of metal-working plants in other parts of the country, however, is bringing to New England machine-tool builders all of the business that they can handle with the present shortage of labor. New business of any size originating in New England is very scarce, but the orders for scattered machines are being received in about the usual volume. There is some sub-contract work being placed in New England, and this is creating a little new business which is confined mostly to the small sizes of machine tools. The small tool factories are making no gains, as the volume of business offered is greater than can be met with a shortage in the working force and railroad difficulties in securing material.

The American Tool Works, Hartford, Conn., has been incorporated with authorized capital stock of $20,000. The incorporators are Frank L. Lindstrom, Bridgeport, John A. Sundkvist, Hartford, and others.

The M. S. Little Mfg. Co., Hartford, Conn., has awarded



NEW NAVY AND ARMY OFFICE BUILDING IN WASHINGTON

In THE IRON AGE of Aug. 8 was told how the Turner Construction Co., which has a number of reinforced concrete building contracts for Government structures, is caring for the inspiration of the human element. One factor is the more or less periodic presentation individually to the employees of posters in colors calculated to impress the fact that they are on the "second line of defense." One of these posters is here reproduced. Also herewith is a view recently taken of the Navy and Army building for offices in Washington. There are in all 17 parallel wings all extending from the one headhouse. This and the wings are all three stories in height, and it was thus regarded as possible to dispense with elevators. The wings are 60 ft. wide, and if placed end to end would make a three-story structure nearly two miles long.

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a contract to the Ellison Construction Co. for an addition, 50 x 66 ft., one story.

The Bridgeport Tool & Gauge Co., Bridgeport, Conn., has been incorporated with authorized capital stock of $20,000 by Henry A. Mailand, Charles A. Roscoe, Albert Kasica and others.

The Fitzgerald Mfg. Co., Torrington, Conn., has secured a permit to erect a factory, 51 x 307 ft., with ell, 50 x 61 ft. The estimated cost is $50,000.

The Neilson & Wilson Tool Co., Hartford, Conn., has been incorporated with capital stock of $15,000. William E. Baker is president; Frederick A. Hart, New Britain, treasurer; Albert E. Wilson, secretary.

The United Standard Machine Co., Stamford, Conn., is to build an addition, 70 x 190 ft., one story.

The Becker Milling Machine Co., Boston, Mass., has awarded contract to the John C. Griffin Co. for a scraper shop and for alterations to its present building.

The Middlesex Mfg. Co., Chester, Conn., has been incorporated with capital stock of $25,000 to manufacture brass, copper, metals, etc. The incorporators are Robert Wilcox and Frederick E. Scammell, New York, and Henry F. Shailer, Samuel R. Shailer, Edgar L. Walker and Jacob C. Edwards.

The General Electric Co., is asking bids on several improvements at its Bryan-Marsh Electric Works, Central Falls, R. I., including in part a wheelhouse, 32 x 80 ft., two stories, and an addition to an engine house, 17 x 19 ft., one story.

The Murphy Aluminum & Bronze Foundry, Inc., Amesbury, Mass., has been incorporated with authorized capital stock of $10,000. Norman Russell is president and William J. Murphy, treasurer.

The Quincy Real Estate Trust, Quincy, Mass., is having alterations, costing $2,500, made in a factory at 2 Washington Street, which has been leased by the Waltham Watch Co., Waltham, Mass.

Several contracts have recently been placed by the Ordnance Department with Connecticut manufacturers, including the following: Colt's Patent Fire Arms Co., Hartford, Browning machine guns; Winchester Repeating Arms Co., New Haven, guns and Lyman gunsights; Remington Arms-Union Metallic Cartridge Co., Bridgeport, spare parts for Browning machine guns; Scovill Mfg. Co., Waterbury, field cleaning rods and brass primer cups; Stanley Works, New Britain, fuse sockets and holders; Chase Rolling Mills, Waterbury, brass forgings; Skinner Chuck Co., New Britain, chucks and drill thread vises.

Philadelphia

PHILADELPHIA, Aug. 12.

The Philadelphia machine-tool trade is expecting orders very soon from the Midvale Steel & Ordnance Co. for its new Nicetown howitzer plant. A few machines have been bought but the bulk of the equipment needed is yet to be ordered.

A few miscellaneous orders have been received by dealers from the Pennsylvania Railroad, but the placing of the large orders expected to result from its recent inquiries is still to come. Included in these purchases will be tools for a locomotive shop at Marietta, Pa.

The Savage Arms Corporation will probably buy equipment soon for a new plant in Philadelphia, which it recently acquired from Isaac A. Sheppard & Co.

The Westinghouse Electric & Mfg. Co. has purchased about 20 lathes and a few small machines for its Essington plant.

The Pennsylvania Railroad Co., Philadelphia, has awarded a contract to Irwin & Leighton, 126 North Twelfth Street, for the construction of new shop buildings at Pitcairn, Pa., to cost, with equipment and machinery, about $1,000,000. The structures will include a one-story machine shop, 84 x 220 ft.; one-story shop, 24 x 49 ft.; engine house, with capacity of 34 locomotives; icehouse, 50 x 66 ft., and one-story storehouse, 59 x 110 ft.

The Ordnance Department, Washington, has awarded contract to the F. W. Mark Construction Co., Finance Building, Philadelphia, for the construction of a one-story gun carriage building, 30 x 147 ft.; small arms house, 60 x 170 ft.; and one-story shop, 33 x 107 ft., at the Frankford Arsenal, Philadelphia. The same contractor will also construct two one-story brick and reinforced-concrete storehouses, 48 x 220 ft., and 67 x 483 ft., respectively.

The William Cramp & Sons Ship & Engine Building Co., Beach and Ball streets, Philadelphia, has filed plans for a one-story forge and blacksmith shop, 100 x 284 ft., to cost about $70,000, and for a one-story coppersmithing works, 50 x 220 ft., to cost $31,000. The Austin Co., Bulletin Building, is the contractor. Plans have also been filed for a nine-story brick office building, 36 x 60 ft., to cost $100,000.

The Modern Machine Works, 1369 Ridge Street, Philadelphia, has acquired a one-story shop, with property about 101 x 120 ft., at 2855-65 North Ruth Street, for a new works.

For a consideration of $454,500, S. L. Allen & Co., Philadelphia, manufacturers of agricultural implements, have acquired a five and two-story factory at Fifth Street and Glenwood Avenue, now occupied by their works. The property, including two buildings, is about 245 x 270 ft.

The Hero Mfg. Co., Gaul and Adams streets, Philadelphia, manufacturer of bronze, brass and metal products, has filed plans for a one-story machine shop, 160 x 200 ft., at Westmoreland Avenue and Stokley Street, to cost $85,000. The Austin Co., Bulletin Building, has the building contract.

Ferdinand F. Metzger, 1038 Ridge Street, Philadelphia, manufacturer of scientific instruments, has acquired a two-story factory, about 38 x 97 ft., at Sixth and Huntingdon streets.

The Atwater Kent Mfg. Works, 4937 Stenton Avenue, Philadelphia, manufacturer of ignition equipment, is considering the erection of an addition.

The one-story boiler plant to be constructed by the Atlantic Refining Co., Philadelphia, at its works, Passyunk Avenue, will cost about $350,000, including boiler equipment and operating devices.

The David Lupton's Sons Co., Allegheny Avenue and Tulip Street, Philadelphia, manufacturer of steel sash, has filed plans for a one-story brick addition, 34 x 180 ft., to cost $60,000.

The Lutz Co., Inc., Thirty-first Street and Gray's Ferry Avenue, Philadelphia, machinists, is taking bids for a three-story machine and shop office addition, 40 x 55 ft., to its plant No. 2, Morris and Bambrey streets.

The one-story addition, 70 x 125 ft., to be erected by the Edward G. Budd Mfg. Co., Twenty-fifth Street and Hunting Park Avenue, Philadelphia, manufacturer of steel automobile bodies, will be used as a metal pickling works. It will cost $25,000.

The New York Shipbuilding Corporation, Camden, N. J., has awarded a contract to Fraser Brace & Co., 1328 Broadway, New York, for a one-story plate and angle shop, 200 x 500 ft., to cost $100,000.

Fire, Aug. 7, destroyed part of the plant of the Jonathan Bartley Crucible Co., Oxford Street, Trenton, N. J., with loss estimated at $80,000. The principal loss was in machinery and equipment, some of which had only recently been installed.

The Badenhausen Boiler Co., 1425 Chestnut Street, Philadelphia, manufacturer of boilers, is building a new one-story boiler works extension, to be known as building No. 3, 200 x 350 ft., at Cornwells.

The Public Service Commission, Harrisburg, Pa., has granted permission for the issuance of bonds and securities by the following electric power companies, for improvements, extensions, etc., in plants and systems: Metropolitan Edison Electric Co., Reading, $3,400,000; Lancaster Light, Heat & Power Co., Lancaster, $105,650; Edison Electric Co., Lancaster, $77,500; Beaver County Light Co., Beaver Falls, $96,500.

The Auto Car Co., Ardmore, Pa., is taking bids for one-story heat treatment plant, 75 x 125 ft.

The Pennsylvania Railroad Co., Philadelphia, is reported considering the erection of a new car repair shop at Newport, Pa.

Recent statements to the effect that the Woodhouse Chain Works, Third and Schenck streets, Trenton, N. J., contemplates building an addition to its plant, are without foundation. No such construction is planned by the company. Thomas T. Woodhouse is the proprietor.

Baltimore

BALTIMORE, Aug. 12.

The Bartlett-Hayward Co., Scott and Henry streets, Baltimore, will build a one-story brick heat-treating building, 62 x 90 ft., to cost $10,000, a one-story frame office building, 40 x 96 ft., to cost $9,500, and a one-story frame storage building, 54 x 72 ft., to cost $9,500, at Columbia Avenue and Putnam Street. Plans have been prepared by Parker, Thomas & Rice, and the contract awarded to Morrow Brothers, Fidelity Building.

The American Ice Co., 309 Calvert Building, Baltimore, will build a one-story brick engine room, 12 x 18 ft., at Schroeder and Raborg streets.

It is understood that the plant being constructed by the James T. Lewis & Sons Co., at Columbia Avenue and Putnam Street, Baltimore, for the manufacture of shrapnel bullets for use at the plant of the Bartlett-Hayward Co., may be doubled in size. The work on the first

The one-story plant, 75 x 125 ft., to be erected at Bush and Ridgley streets, Baltimore, by Vaile & Young, 216 North Calvert Street, operating the Young Sheet Metal Mfg. Co., will be equipped with sheet-metal working and other machinery for the manufacture of tanks, stacks, etc., at a total cost of about $20,000.

The American Can Co., Union Trust Building, Baltimore, has awarded a contract to the N. M. Loney Co., Baltimore, for a three-story, reinforced-concrete and brick plant, 105 x 175 ft., at Hudson and Boston streets. Contract has also been let to A. E. Baxter, Ellicott Square, Buffalo, N. Y., for rebuilding, at a cost of $150,000, its six-story plant at Ellicott City, Md., recently destroyed by fire.

Plans have been completed by the Newport News Shipbuilding & Dry Dock Co., Richmond, Va., for the construction of its proposed new marine boiler works on the James River for the Emergency Fleet Corporation. The initial plant will consist of a main one-story building, 160 x 600 ft., to be used for boiler shops, machine shops and foundry, with a number of smaller shop buildings and a power plant for works operation. The proposed plant is estimated to cost with machinery and equipment over $3,000,000, and it is expected to have the works in operation early next Spring.

The American Truck-Body Co., Martinsville, Va., has been incorporated with a capital of $100,000 by C. W. Waller and H. A. Ford to manufacture automobile bodies.

The Virginia Machinery & Well Co., Richmond, Va., has increased its capital from $50,000 to $100,000.

The St. Johns River Shipbuilding Co., Jacksonville, Fla., recently incorporated by John H. Fahey, Boston, Mass., and associates, has acquired the shipbuilding works of the Hillyer-Sperring Co. and Dunn Wooden Shipyard Co., South Jacksonville, to be used as the initial works. The property consists of seven shipways with erecting buildings.

The Karsten Implement Co., Macon, Ga., has been incorporated with a capital of $20,000 by James T. Ross, P. D. Karsten and James Seagle, to manufacture agricultural equipment.

Preliminary construction work has been commenced by the Alabama Dry Dock & Shipbuilding Co., Mobile, Ala., on a new 10,000-ton drydock.

The Steel Cities Chemical Co., Ensley, Ala., is rebuilding its plant recently destroyed by fire. The new plant will have an output of about 40 per cent more than the former works, and is estimated to cost about $150,000.

Chicago

CHICAGO, Aug. 12.

An official ruling as to the status of machine-tool dealers is awaited. When it comes it will, according to general opinion, give endorsement to the placing of Government orders with those dealers who are the direct and exclusive selling agents of the manufacturers. There is some question, however, as to what will be ruled in the case of the open lines, the tools which any dealer can sell, a commission being paid for each transaction. Local authorities agree as to the useful function of the exclusive representative.

In line with the Government's plan of conserving iron and steel for essential purposes, the sellers of tools are giving a pledge to the builders that they will use their utmost endeavors "to insure that they (stocks) will be distributed and applied solely to essential uses." The procedure imposes but little hardship on the distributors of machinery for the reason that there are few buyers to-day other than those entitled to delivery because of official, if automatic, classification. A jobber in iron and steel can only replace each month the material that goes into essential industry, therefore he must exact the pledge referred to from the machine-tool builder, and the latter must pass it along to the seller. The last-named, again, must do his part, and it is being done, though pledges are not required where there is no question as to the essential nature of the purposes for which the machine is to be used. The spirit of the machinery trade is to follow Government regulations minutely.

The Chicago Pneumatic Tool Co., Chicago, has issued a list for its Cleveland, Ohio, plant.

The building which the R. M. Eddy Foundry Co., Chicago, will erect on the land it recently purchased at Menard and Fillmore avenues, Chicago, will be 90 x 284 ft. The contract has been awarded to the Austin Co., 122 South Michigan Avenue, and a building permit has been secured. It will be of brick, steel and concrete and cost about $100,000. The building will be used in the manufacture of a lathe designed by George Bryant for end-facing, grooving and waving shells, and turning the bands, the machine being one that can be fitted for these various operations. The company has purchased considerable medium-sized and heavy machinery for the new shop, which will be operated as a unit apart from the present plant of the company. The lathes have been in great demand and large orders remain to be filled.

Many sellers are estimating on the tools required to make 2000 155-mm. shells per day, for which the Cribben & Sexton Co., Chicago, recently made inquiry. It is reported that the War Department is anxious to place more contracts for 155-mm. shells in this district, also for 155-mm. guns.

Greater activity by railroads is shown in some directions. The Rock Island has done some buying, a St. Paul list is simmering, and the Chicago & Eastern Illinois and Monon Route have to act on small lists.

The Illinois Central Railroad has leased to W. J. Accola, representing a company that will manufacture and repair freight cars, its West Pullman car works, comprising 27½ acres of land, with buildings and trackage. The lease is for a short term of years.

The Litchfield Foundry & Machine Co., Litchfield, Ill., has been awarded a contract by the Government for cartridge-making machines for the Western Cartridge Co., Alton, Ill.

The Illinois Central Railroad Co., Chicago, is planning for the erection of new shops at Central City, Ky., to cost about $150,000. They will include a one-story machine shop, 40 x 150 ft.; 100-ft. engine house, with capacity for 12 locomotives; one-story power plant; 85-ft. turntable; tool equipment building and other structures.

The Chicago Bridge & Iron Works, West 105th Street, Chicago, has filed plans for the erection of a one-story shop addition to cost $10,000.

The Lambert Multiplus Co., Peoria, Ill., has broken ground for a three-story works at East Peoria, 60 x 250 ft., to cost $200,000.

The Lincoln Brass & Spinning Co., 3262 Grand Avenue, Chicago, is building a two-story addition, 25 x 125 ft. The R. J. Regnell Co., South La Salle Street, is the contractor.

The Chicago, Rock Island & Pacific Railroad Co., Chicago, will build a one-story power plant, 40 x 60 ft., at its yards at Council Bluffs, Iowa.

The Minneapolis Steel & Machinery Co., Minneapolis, Minn., has broken ground for a one-story machine shop, 80 x 125 ft., on East Thirty-third Street, to cost $10,000.

The Universal Incinerator Mfg. Co., Wichita, Kan., has completed revised plans for a two-story works, 40 x 100 ft., estimated to cost $25,000.

The Springfield Gas & Electric Co., Springfield, Mo., is having plans prepared by Sanderson & Porter, engineers, 52 William Street, New York, for a new electric power plant.

Milwaukee

MILWAUKEE, Aug. 12.

A flood of inquiries for machine-tools of all descriptions is being received by local tool builders from al points in the Middle West, indicating a decided increase in activity in the program of the War Industries Board in utilizing shops in the Central States for war work. At the same time the steady stream of single-tool or small-lot orders for tools continues. The only large-lot inquiry, which was for 62 light millers for bayonet manufacture, still has not developed into actual business, according to latest information. The run of business, however, contains large requirements of the heavy type machines.

The labor situation is developing some disputes, but with one or two exceptions these are adjusted with reasonable speed through the offices of the Government. The basic 8-hr. day is now in effect in most large shops, but the increase in wages of about 5 per cent, accomplished through this concession, is not regarded as sufficient in some quarters.

The Holt Hardwood Co., Oconto, Wis., which Aug. 1 took over the plant and business of the W. E. Williams Co. of that city, manufacturer of hardwood flooring, is setting apart a section of the plant for the establishment of a machine-shop designed to handle Government war work. Arrangements are being made to acquire lathes and other machine tools. W. L. DeWitt is vice-president and general manager.

The Universal Shipbuilding Co., Sturgeon Bay, Wis., has taken a contract to build three ocean-going tugs, 150 ft. long, at a price of approximately $750,000, for the Emergency Fleet Corporation. The hulls will be of wood. The yards are being enlarged and equipped for the construction of steel vessels, and a complete boiler and structural shop equipment has been acquired for transfer to Sturgeon Bay. In addition a small list of new equipment is being purchased. Herbert L. Peterson is treasurer.

The North End Foundry Co., West Allis, is erecting a one-story brick, steel and concrete shop addition, 60 x 80 ft., under the direction of Klug & Smith, Mack block, Milwaukee, at a cost of $15,000.

The Reichert Mfg. Co., 1440 Booth Street, Milwaukee, manufacturer of metal forms and molds for reinforced concrete construction, has increased its capital stock from $40,000 to $60,000 to accommodate increased demand. August F. Reichert is vice-president and manager.

The Success Milking Machine Co., 709 Chestnut Street, Milwaukee, has increased its capital stock from $15,000 to $100,000 in preparation for enlarging its output.

The Sanitary Refrigerating Machine Co., 345 Jackson Street, Milwaukee, is enlarging its production facilities and has increased its capital stock from $25,000 to $100,000 to cover expansion.

The Racine County Board of Supervisors has authorized the board of trustees of the county asylum to purchase two new 150-hp. water-tube boilers and construct a 125-ft. smoke-stack, at an estimated cost of $14,000. George C. Peterson is chairman of the trustees.

The Leathem & Smith Co., Sturgeon Bay, Wis., has laid keels for three of six 100-ft. tugs, which it has contracted to build for the Emergency Fleet Corporation, and will lay the remaining keels before the end of August. Delivery is specified by June 1, 1919, and three are to be ready for service by May 1, next. The company has purchased considerable used equipment and some new transmission, hoisting and other machinery. The contract now in hand amounts to $960,000.

The Crown Ventilator Co., Milwaukee, has been organized to manufacture ventilating and blower systems and other sheet-metal products. The capital stock is $25,000 and the corporators are R. E. Pfeil, Paul D. Durant and Herman F. Friedrich.

The George Diamond Economy Process, Inc., has been organized with a capital stock of $30,000 to manufacture machinery and special equipment. The corporators are George Diamond, Anna T. Diamond and Albert T. Jenkins.

The Universal Machinery Co., 784 Thirtieth Street, Milwaukee, has awarded contract for the structural steel for the power plant of its new foundry and machine-shop at the foot of Sixty-fourth Avenue, West Allis, to the Lakeside Bridge & Steel Co., North Milwaukee. Contracts will be awarded soon for the machine-shop, 150 x 480 ft. The foundry is now well under way. Frank E. Gray and Val. A. Siebert are associated architects on the project, which is estimated to involve $200,000. E. C. Devlin is president.

The Horizontal Hydraulic Hoist Co., Milwaukee, has taken over the plant and business of the Young Patent Hoist Co., 35 Twenty-fifth Street, Milwaukee, and will largely increase the production of horizontal hydraulic hoists and dump bodies for motor trucks. Edward R. Bacon, president of the Young Company, is president and general manager of the new company.

Detroit

DETROIT, Aug. 12.

Production of Ford motor cars during the fiscal year which ended July 31, 1918, totaled about 700,000, as compared with a production of 785,000 cars during the fiscal year 1917. Retail sales during the present year, therefore, will aggregate between $300,000,000 and $350,000,000. On June 10, it is said, there were 110,607 unfilled orders on the books. The company has discontinued assembling cars at its branches in Washington, Denver, Houston, Los Angeles, Buffalo and Oklahoma City. The assembling plants in Philadelphia, Cambridge, Mass.; St. Louis, Pittsburgh, Seattle, Wash.; Portland, Me.; Indianapolis, Ind.; Louisville, Ky.; Cincinnati, and Milwaukee, Wis., have been taken over by the Government and are either used for storage purposes or for other war work. The men employed formerly in these assembling plants have all been put to work on war business. Its Canadian plant, at Ford City, Ont., has been reopened. It was recently closed, indefinitely, it was stated.

Among the Michigan concerns awarded contracts by the Government are: Ford Motor Co., Detroit, ambulances and set dies and tools; National Can Co., Detroit, tin cans; J. W. York & Sons, Grand Rapids, trombones and bassoons; Togan-Stiles Co., Grand Rapids, portable buildings; Michigan Bolt & Nut Works, Detroit, drop forgings; Republic Motor Truck Co., Alma, motor trucks; Pemberthy Injector Co., Detroit, injectors; Chalkis Mfg. Co., Detroit, artillery; Sparks-Withington Co., Jackson, dies for making shin guards; Detroit Copper & Brass Rolling Mills, Detroit, cartridge case disks; John W. Brown Mfg. Co., Detroit, rifle periscopes; C. R. Wilson Body Co., Detroit, bombs; Briggs Mfg. Co., Detroit, truck tops for drivers' seats.

The work of reconstructing the plant of the Precision Castings Co., Pontiac, Mich., which was destroyed by fire in May, is being hurried, as the concern was engaged exclusively on Government work. Whereas, the former building was of wood and concrete blocks, the new units will be of concrete exclusively. There will be two buildings, 80 x 230 ft., and several storage sheds for coal, sand, etc. About 150 will be given employment, one-third of them women.

The Franklin Brass Foundry Co., Battle Creek, Mich., has taken over the factory of the American Column Co., which is going out of business.

Albert Kahn, architect, has let the contract to the Bryant & Detwiler Co., Detroit, Mich., for the erection of a five-story steel and concrete factory building for the Burroughs Adding Machine Co., Detroit.

Ohio

CINCINNATI, Aug. 12.

The Argentine Government has lately purchased a number of machine tools here, and it is reported that further purchases are contemplated. A visit of commissioners from that country is expected at an early date, when it is believed more orders will be placed. This is a comparatively new field for machine tool builders and much interest has been aroused by the unexpected orders lately received. The recent order that practically cuts off the manufacture of pleasure automobiles will not affect any nearby plants, as they are now engaged in war work. With very few exceptions all metal-working plants in this vicinity are now operating on essential work. Although there are no strikes on here the labor situation is becoming more acute. Many plants are employing women and find that on light work they prove very satisfactory.

The Standard Electric Tool Co., 128 Opera Place, Cincinnati, has purchased the former sheet-metal working plant of Kirk & Blum on Western Avenue. This building contains about 11,000 sq. ft. of floor space and will enable the company to double its present output of portable electric drilling and grinding machines. The new quarters will not be occupied until some time in the fall. F. S. Baldwin is general manager.

The Huenefeld Co., Cincinnati, has let contract for an addition to its power plant. Automatic stokers will be installed as well as additional boilers. Chas. E. Pfau is secretary.

The Bradford Machine Tool Co., Cincinnati, will build an addition to its plant in West End, mostly for storage purposes.

The John H. McGowan Co., Central Avenue, Cincinnati, maker of pumping machinery, has let contract for an addition estimated to cost $40,000.

The Bentel & Margedant Co., manufacturer of woodworking machinery, formerly located on Fourth Street, Hamilton, Ohio, is moving into its new plant on Canal Avenue.

Work has commenced on the new office building of the Niles Tool Works Co., Hamilton, Ohio. As soon as the new building is completed the present offices will be fitted up for manufacturing purposes. A. Wood is works manager.

Plant No. 4 of the Maxwell Motor Co., Dayton, Ohio, recently destroyed by fire, will be rebuilt at an early date. The loss sustained was estimated at $325,000, a large part of which was machinery.

The Dayton Power & Light Co., Dayton, Ohio, is having plans made for a large addition to its power plant.

The Eagle Engineering Co., Springfield, Ohio, has taken out a permit for a brick and reinforced concrete factory building, estimated to cost $25,000.

The Franklin Die & Tool Co., Columbus, Ohio, has increased its capital stock from $30,000 to $100,000, and will increase the capacity of its plant.

It is currently reported that the Over-the-Top Aeroplane Co., Columbus, Ohio, will commence work at an early date on a large plant on West Broad Street. Charles Smith is one of the principal officers.

The Kilbourne & Jacobs Mfg. Co., Columbus, Ohio, is remodeling a building adjoining its plant.

The Ironton Engine Co., Ironton, Ohio, has increased its capital stock from $200,000 to $300,000. No additions are contemplated in the near future.

The Alten Foundry & Machine Works Co., Lancaster, Ohio, contemplates an addition to its plant.

The Cleveland Automatic Machine Co., Cleveland, will erect a two-story extension, 60 x 216 ft. The contract has been placed with the Austin Co., Cleveland.

The automobile plant of the Ben-Hur Co., Willoughby, Ohio, has been taken over by the Government, which will place it in operation. The plant is of modern brick and steel construction, 150 x 400 ft. It was built to manufacture automobiles, but the company went into the hands of a receiver and the plant has been shut down for some time.

The Bowling Green Die & Tool Co., Bowling Green, Ohio, has been incorporated with a capital of $25,000 to manufacture dies, tools, jigs, fixtures and special machinery. The incorporators are Clyde V. Urschel, P. M. Davidson, Fred W. Uhlman, L. D. Mercer, Harry Barron, H. J. Rudolph and R. L. Swartz. At a meeting of the stockholders Clyde V. Urschel was elected president; W. M. Gray, vice-president; Philo S. Hankey, secretary and treasurer, and R. L. Swartz, general manager.

The Central South

LOUISVILLE, KY., Aug. 12.

John Griffith & Son, contractors, Chicago, have been awarded a large section of the general contract on the new artillery cantonment at Stithton, Ky., and will sublet the heating, plumbing and lighting contracts. This camp will cost about $15,000,000 in all and will house about 60,000 men. Waterworks are to be installed as well as a refrigerating plant.

John E. Ulrich, manager of the Bizz Engineering Co., 107 West Main Street, Louisville, wants prices on equipment for a machine and metal-working shop for manufacturing deep well machinery and conveying equipment. The company was recently incorporated with a capital of $50,000. Equipment to cost about $10,000 will be installed. W. E. Zoeller, 201 Western Parkway, is vice-president.

Air compressors and complete mining machinery are required by the Central Kentucky Block Coal & Mineral Co., Hawesville, Ky., which will open a mine of 500 tons per day output.

The Howard Shipyards Co., Paducah, Ky., is planning the immediate rebuilding of its shipbuilding plant, recently destroyed by fire with reported loss of $125,000.

St. Louis

ST. LOUIS, Aug. 12.

The Beall Pressed Steel Co., St. Louis, Mo., has been incorporated with a capital of $50,000 by Charles L. Beall, Alfred C. Wilson and others to manufacture pressed steel products.

The trench mortar sheet department of the Western Cartridge Co., Alton, Ill., was damaged by fire Aug. 8, with a reported loss of $100,000. The plant will be restored.

The Arkansas Cotton Gin Co., Arkansas City, Ark., H. Thame president, will equip a cotton ginning plant to cost about $23,000.

The Standard Warehouse & Compress Co., Monroe, La., will expend about $15,000 for two boilers and other power plant equipment.

Joseph A. Schofield, Warren, Pa., will equip a wood alcohol plant at Bierne, Ark. Other chemicals will be produced also and Government aid is expected in the installation of a $2,000,000 plant.

The McEwen Mfg. Co., Tulsa, Okla., has increased its

capital from $350,000 to $450,000 and will add to its plant capacity.

George N. Neff, Kansas City, Mo., will equip a garage and repair plant to cost about $20,000.

The Orleans Cotton Mills, 1724 St. Thomas Street, New Orleans, La., will equip a 1300-spindle plant with electric drive.

Richmond, Mo., will buy a centrifugal pump and a triplex pump, both motor-driven.

The Memphis Furniture Mfg. Co., Memphis, Tenn., is in the market for water-tube boilers for its factory.

The West St. Louis Machine Tool Co. is building a $5,000 addition to its shop at 606 South Vandeventer Avenue, St. Louis, which it will equip with about $30,000 worth of blacksmithing appliances and other tools.

The Johnson Tin Foil Co. is building a two-story factory at 6106 South Broadway, St. Louis, at a cost of $40,000.

The St. Louis Screw Co. is building an $8,000 addition to its plant at 635 Holly Stret, St. Louis.

The Standard Semi-Steel Foundry Co., Harrisonville, Mo., has acquired a one-story brick building, 75 x 200 ft., at Clinton, Mo., and will remodel it for a foundry to specialize in castings for railroad use.

The new heat treating plant to be erected by the Moon Motor Car Co., St. Louis, in connection with its shell works, will be one-story, 50 x 75 ft., and cost $10,000.

The Mallinckrodt Chemical Works, St. Louis, Mo., is planning for the immediate rebuilding of a portion of its works, recently destroyed by fire with reported loss of about $125,000.

The Miami Waco Lead & Zinc Co., Waco, Mo., is planning the construction of a new concentrating plant to cost $40,000 with equipment. W. P. Cunningham is superintendent.

Texas

AUSTIN, Tex., Aug. 10.

The Prairie Oil & Gas Co. will install a pumping plant on the Brazos River at a point near Breckenridge and lay a pipe line 40 miles to Ranger for providing a municipal water supply and for its own and other oil drilling outfits in that field.

The Lockhart Compress Co., Lockhart, recently incorporated, will build a cotton compress to cost about $50,000. W. M. Holmes is a stockholder.

The Marshall Mill & Elevator Co., Marshall, has increased its capital stock from $80,000 to $125,000, and will install additional machinery.

The Eastern Texas Traction Co., Beaumont, subsidiary of the Stone & Webster Engineering Corporation, Boston, Mass., has been incorporated with a capital stock of $2,850,000 for the purpose of taking over the holdings of the Jefferson County Traction Co., the Beaumont Light & Power Co., the Beaumont Traction Co. and the Port Arthur Light & Power Co.

The new army machine shops to be erected by the War Department at San Antonio, Tex., will consist of a main building, 500 x 500 ft. The plant will cost about $1,500,000, of which amount $1,000,000 will be for the main building, machinery and equipment, and adjoining storehouse. The plant will be used for the repair of automobiles, motor trucks, motorcycles, wagons and other vehicles. The American Construction Co., Houston, has the contract for erecting.

The Port Arthur Iron Works, Port Arthur, Tex., is planning the construction of a works for the construction and repair of tugs, barges, etc. It will include machine shops and will be located on Taylors' Bayou. F. G. McEwan is general manager.

California

LOS ANGELES, CAL., Aug. 3.

The Wilson & Willard Mfg. Co., 2411 East Fifteenth Street, Los Angeles, manufacturer of oil-well tools, etc., has completed plans for a new plant on East Vernon Avenue near Santa Fe Avenue, to consist of three buildings, comprising a one-story machine shop, 100x200 ft., a one-story forge and blacksmith shop, 100x100 ft., and a two-story office building, 40x60 ft., with wing 25x30 ft. A traveling crane of 35-ft. span will be installed.

The Morris Tire Machinery Co., Los Angeles, has been incorporated with a capital of $57,600 by E. H. Furman, Mountain View, Cal., and Edgar Wengler, 3736 Twentieth Street, San Francisco.

The City Council, Porterville, Cal., is considering the construction of a municipal electric lighting plant.

The Baker Iron Works, North Broadway, Los Angeles, operating a sheet steel works and foundry, has filed plans for a one-story foundry addition, 70x80 ft.

The National Projecting Machine Co., Los Angeles, has been incorporated with a capital of $100,000 by Eugene Inge, John J. Gilligan and John Rikelman.

The Progressive Machine Co., Los Angeles, has been organized to operate a plant at 1918-22 South Main Street. Albert T. King and Alfred Gibbons head the company.

The Western States Gas & Electric Co., San Francisco, Cal., is planning immediate construction of its proposed hydroelectric power plant near Twin Lakes, Amador County, estimated to cost $1,000,000.

The Pope Shipbuilding Corporation, Los Angeles, has been incorporated with a capital of $1,000,000 to construct and operate a plant near Newport Beach. It is negotiating a lease covering about 30 acres of waterfront property, and plans to build both steel and wood vessels. E. D. S. Pope, Frank Scoville and William M. Loftus, Los Angeles, are the incorporators; A. H. Koebig is engineer.

A one-story reinforced-concrete power plant for works operation estimated to cost $10,000, will be constructed by Rosenberg Brothers, Fresno, Cal., at their fruit packing plant on Cherry Avenue.

The California Associated Raisin Co., Holland Building, Fresno, Cal., will build a reinforced-concrete electric power plant at its works at East and California Avenues, to cost, with adjoining structure, $40,000.

The Llewellyn Iron Works, Main and Redonda streets, Los Angeles, has received a contract from the Emergency Fleet Corporation for marine engines, aggregating about $4,000,000. The engines will be constructed in 1400-hp. units for wooden vessels and 2800-hp. for steel ships. It is understood that the company can handle this order without increase in plant capacity. Plans have been filed for a one-story building, 65x130 ft.

The California Welding Works, Los Angeles, has filed notice of organization to operate a plant at 149 North Broadway. Thomas W. Connolly, 1280 West Thirty-seventh street, and Charles C. Thompson head the company.

The San Joaquin Light & Power Corporation, Fresno, Cal., has received permission to issue bonds for $113,000 for the additions to its power plants and system, as well as for improvements in existing plants.

The San Diego Marine Corporation, San Diego, Cal., is being organized to operate the new Government shipbuilding works to be located at this point. The works will include machine shops, forge shops, pipe works, erecting shops, and administration structures. The initial plant will consist of 12 buildings estimated to cost over $5,000,000.

The Williams Mfg. Co., Los Angeles, has been incorporated with a capital of $50,000 by F. R. Millar, J. F. Huber and LeRoy Robinson, Los Angeles, and A. C. Williams, Santa Ana, to manufacture electric equipment.

A new electrically operated pumping plant will be constructed by the City Council, Colinga, Cal., to cost about $20,000. Bonds for this amount have been voted.

The Ralph J. Chandler Shipbuilding Corporation, Los Angeles, has been incorporated with a capital of $1,000,000 by Ralph J. Chandler, E. P. Clark, R. P. and M. H. Sherman and A. I. Smith.

The San Diego Consolidated Gas & Electric Co, San Diego, Cal., has been granted permission to issue bonds for $1,100,000 for the construction of an addition to its electric power plant and extensions in its system.

The Bedell Engineering Co., Vernon, Cal., is operating its plant at full capacity for the manufacture of refrigerating equipment for 20 vessels now being constructed for the Emergency Fleet Corporation at the plants of the Southwestern Shipbuilding Co., San Pedro Harbor, and the Schaw-Batcher Co. Pipe Works, South San Francisco.

The Bureau of Yards and Docks, Navy Department, Washington, is taking bids for a two-story structural iron works, 300x695 ft., at the Mare Island navy yard, near San Francisco. The new shop is estimated to cost $1,000,000.

The Pacific Northwest

SEATTLE, Aug. 5.

The extreme labor shortage and congested freight conditions are holding back production and slowing up work. If possible, conditions are becoming more acute and the demand for unskilled as well as skilled workers is increasing daily. In the allotment of quotas of unskilled labor to be furnished by the various states to war industries during the next two months, under the system of Government recruiting, the state of Washington is asked to furnish 11,340. The transfer of workers to war industries is crippling non-essential plants. Recent announcement of Emergency Fleet Corporation that only employees whose loss

would retard ship production will be given deferred classification in the draft threatens to further aggravate conditions in shipbuilding districts, where considerable shortage is now experienced. Freight shipments have been badly delayed. Several ships in Seattle yards have been completed for several weeks and awaiting shipment of machinery from eastern points before they can be turned over to the Government.

The West Coast Lumbermen's Association has received an order from the Government for 23,800,000 ft. of Douglas fir, meaning the expenditure of more than $500,000 in the Northwest. The fir lumber mills of Oregon and Washington have pledged supply to the Govermnent each month not less than 600 cars of airplane timber.

The Ames Shipbuilding Co., Seattle, has received contracts for 14 8800-ton steel ships for the Emergency Fleet Corporation.

The South Bend Shipbuilding Co., South Bend, Wash., has received contracts for four topsail schooners, each 2200 deadweight tons.

The Mars Metal Co., 1049 Railroad Avenue, Seattle, will erect a one-story masonry foundry building on First Avenue South and Spokane Street, 90x120 ft., of hollow tile, costing $10,000.

The Patterson-MacDonald Shipbuilding Co., Seattle, will begin work at once on its proposed foundry and machine shop, 100x200 ft. Company is also considering plans for a large engine building. Contracts for ships of 4200 tons each are held by the company.

Oscar Rohn, general manager of the East Butte Copper Company, Butte, Mont., has purchased the mines of the Boulder River Chrome Co. for $500,000, and will expend $200,000 in the development of the properties.

The Foundation Co., Woolworth Building, New York, operating shipyards in Portland, Tacoma and Victoria, B. C., has been advised by the French Government that it will be given contracts for all the wooden ships it can turn out up to 1920. It is expected the first order placed with the company for 20 ships will be duplicated.

The Associated Engineering Co., Portland, recently incorporated, has bought the business and plant of the Specialty Box Mfg. Co., 109 South Crawford Street, St. Johns, Ore. A blacksmith shop will be added and machinery installed for manufacturing ship tackle blocks and pulleys.

The Schaake Co., Ltd., Vancouver, B. C., is having plans prepared for enlargement of its shops, storehouse and the construction of new pattern shops and a foundry building, the latter 40x120 ft.

Traylor Engineering & Mfg. Co., Allentown, Pa., has established headquarters in Spokane, Wash., for the states of Washington, Oregon, Idaho, Montana, Wyoming, as well as British Columbia. W. H. Agens will have charge.

The Pacific Wire & Plating Works, Seattle, will erect a factory to cost about $3,000 exclusive of equipment.

The Supple-Ballin Co., Portland, is about to build a large outfitting dock for vessels constructed for the Emergency Fleet Corporation. It will accommodate 10 hulls at a time and will cost $200,000.

The Globe Milling Co., Portland, is to erect a 1000-bbl. flour mill at the St. John terminal.

The Vaughan Motor Works, Portland, is erecting a building, 50x132 ft., to be used as an assembling plant; an addition to its foundry, 38x50 ft., and an addition to its blacksmith shop, 25x30 ft. These structures will increase the capacity of the works 75 per cent, and were made necessary by the pressure of the shipbuilding industry.

Canada

TORONTO, Aug. 10.

Announcement has been made by the Ontario Hydro Electric Power Commission that important extensions will be made to its system. The Ontario Government has authorized the expenditure of $500,000 to increase the electrical equipment at Niagara Falls, Ont., to complete the Chippewa plant, for aiding Buffalo and other plants engaged in munition work. It is understood that if the United States Government supplies the requisite machinery and labor, the commission will supply the United States with 200,000 hp. by the fall of 1919, and increase this by 30,000 hp. per month until the maximum of 300,000 hp. is reached. Speeding up on construction work on the Chippewa Canal has already been started. Work will be started immediately on the construction of a plant to develop 135,000 hp. at Nipigon on the Niagara River, 60 miles from Port Arthur, to supply Port Arthur and Fort William. The Nipigon plant will require an initial expenditure of $3,000,000 and the ultimate cost will be about $5,000,000. Developments at High Falls, on the Rideau Canal; Eugenia Falls, on the Severn River and at Rany Falls on the Trent River, will also be considerably increased. The total initial expenditure entailed by the plan will be about $8,000,000.

The business, which has been operated for the past nine years under the name of MacKinnon, Holmes & Co., Ltd., Sherbrooke, Que., is now being conducted under the name of the MacKinnon Steel Co., Ltd. The company, of which J. W. Bowman is president, George D. MacKinnon vice-president and general manager, and F. C. Johnston secretary-treasurer, fabricates structual steel and steel plate.

The head office of the Halifax Shipyards, Ltd., which is building a plant to cost $4,000,000, will be located at 286 St. James Street, Montreal.

The Leaside Munition Co., Toronto, has started work on an addition to cost about $3,000,000, for the manufacture of 12-in. shells for the United States. The plans call for two buildings of brick and steel, one 280 ft. long, the other 640 ft. At present the company is turning out 6-in. shells only for the British Government at the rate of about 4000 per month. The shells will be both forged and machined. The Leaside Co. has now 3500 on its payroll. This force will be increased to 7000 men. It is expected that the buildings will be completed and machinery installed before winter.

John T. Hepburn, Ltd., Toronto, has taken over the plant of the Martin Pump & Machine Co., 47 Dawes Road, Toronto. The company will manufacture special shell lathes for the present and later will turn out a complete line of steam and water pumps, etc.

Krug Bros., Co., Ltd., Chesley, Ont., are in the market for a motor, sixty-cycle, 220-volt, 20 to 25 hp.; also 18 or 20 ft. of shafting.

The E. T. Wright Co., Hamilton, Ont., wire and tinware manufacturer, will build a one story and basement addition 56 x 150 ft., to cost $50,000.

The Beaver Board Co., Thorold, Ont., has awarded contract to the Pigott-Healy Construction Co., Hamilton, Ont., for the erection of an addition to cost $100,000.

The National Abrasive Co., Boston, Mass., will establish a plant at Niagara Falls, Ont., and plans to have the plant completed by November. The company located a branch at Hamilton, Ont., but not being able to get the 5000 hp. needed to operate was forced to sell out. The Ontario Hydro Electric Power Commission has promised the company the required horsepower at Niagara Falls.

The Nasmyth Lumber Co., 207 Hastings Street West, Vancouver, B. C., will erect a sawmill and flume, and is also contemplating building a box factory. The undertaking will cost about $150,000.

The Thomas Pink Co., Pembroke, Ont., contemplates rebuilding its munitions factory destroyed by fire with a reported loss of $200,000. New machinery will be required.

T. Ainsley Allen has been awarded contract for a brick and concrete addition to the Robb Engineering Works, Ltd., Amherst, N. S., to cost $60,000.

G. Stewart & A. Good, Brandon, Man., have the contract for a pump factory for H. Carter, to cost about $10,000.

The British Munitions Co., Ltd., Verdun, Que., will build an addition at a cost of $30,000, and has awarded the erection contract to E. G. M. Cape & Co., Ltd., 10 Cathcart Street.

The Prince Rupert Hydro Electric Co., Prince Rupert, B. C., contemplate the erection of a waterpower plant to cost $100,000. P. Lorenzen is engineer.

The Electric Oil & Gas Heating Co., Ltd., Toronto, has been incorporated with a capital stock of $100,000 by John L. Scott, Francis W. Trickey, David Archer and others.

The Bay Mfg. Co., Ltd., North Bay, Ont., has been incorporated with a capital stock of $40,000 by Walter E. Morgan, Wyatt H. Bowlby, William H. Symons and others, to carry on a general foundry and machine shop business.

The Campbell Howard Machine Co., Ltd., Sherbrooke, Que., has been incorporated with a capital stock of $650,000 by John T. Hackett, Jules Brunea and others to manufacture wood-working machinery, etc.

The Ingersoll Machine Co., Ltd., Montreal, has been incorporated with a capital stock of $500,000 by Louis A. David, Louis P. Crepeau, S. H. R. Bush and others, to manufacture machinery, etc.

The Dominion Bridge Co., Ltd., Montreal, has been awarded the contract for building two large coal handling bridges of the traveling bridge type, equipped with clam shell buckets, for the Department of Naval Service, H. M. C. Dockyard, Halifax, N. S.; also a contract for two large shipbuilding cranes of the traveling gantry type, with 7-ton man trolleys, for the Tidewater Shipbuilders, Ltd., Three Rivers, Que.